

Innovative Creativity

How to deliver measurable values fast.

Tom Gilb

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Bærum Innovation Hub, <https://www.binhub.com>
4th April 2019 16:00 to 19:00 Meetup
Talk and Workshop

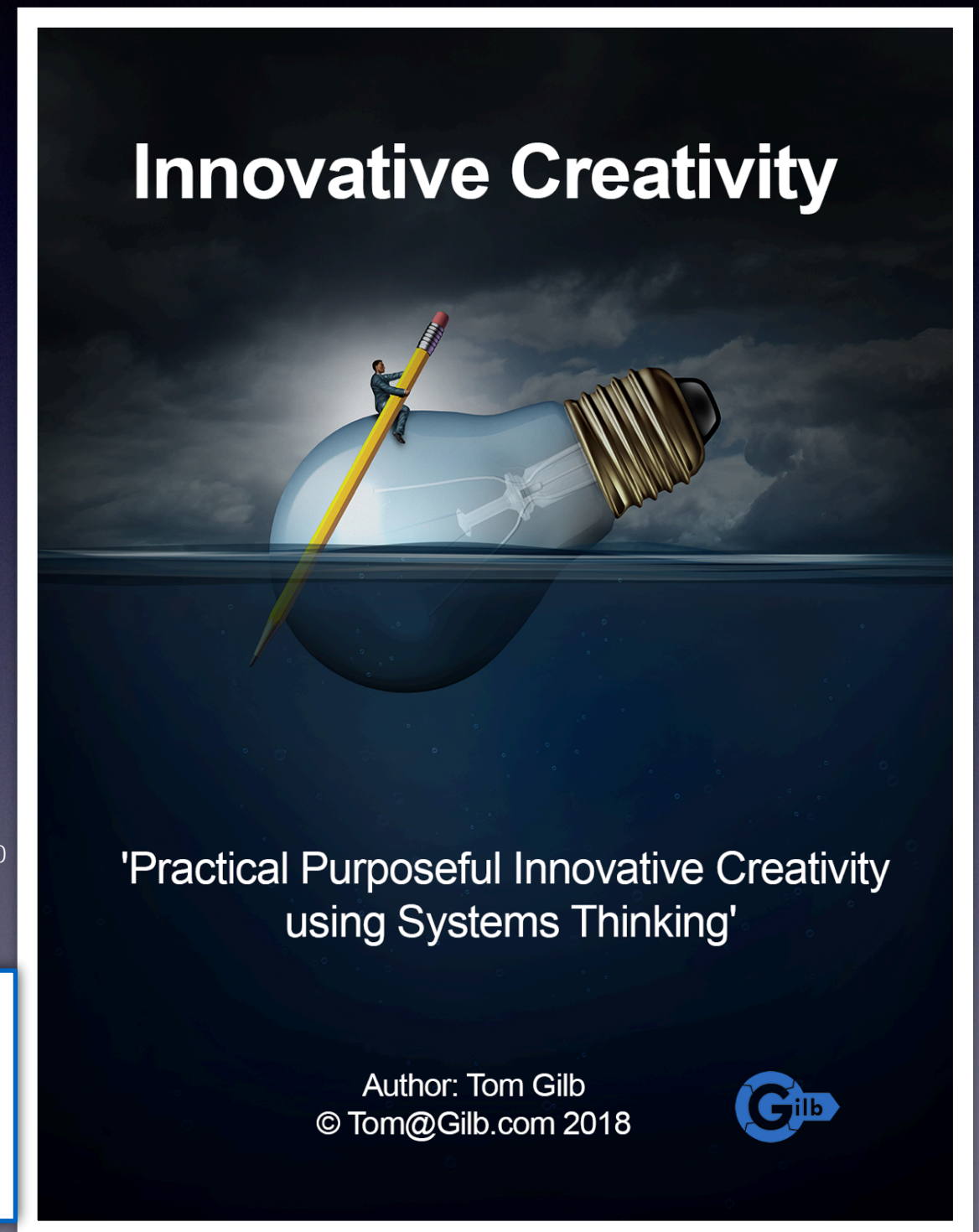
COPY OF SLIDES

<https://www.dropbox.com/s/kw08jepab3laq1h/Innovative%20Creativity%20Talk%20COPY%20050419.pptx?dl=0>

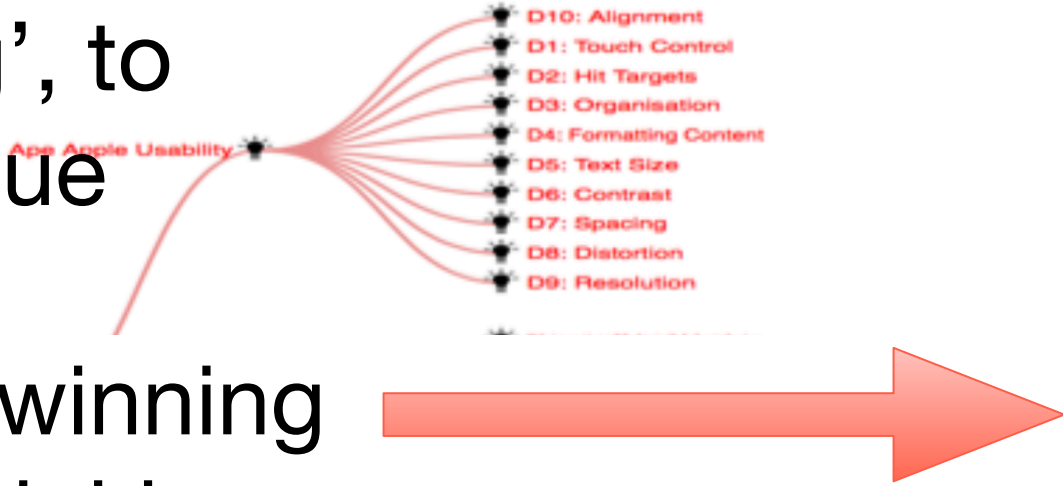

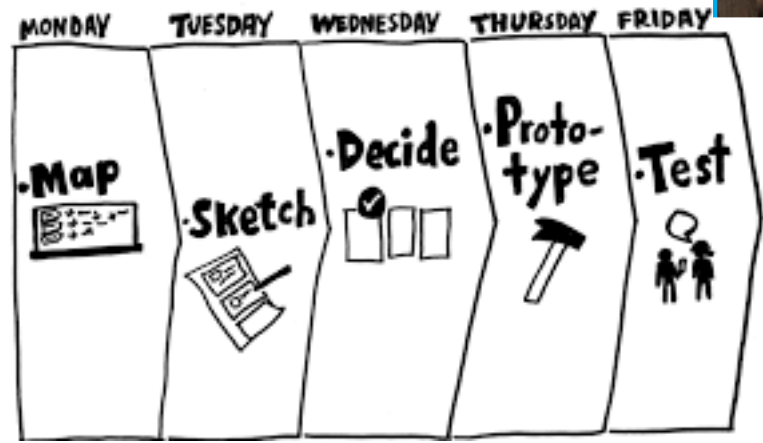

'Innovative Creativity', digital book

<https://www.gilb.com/offers/FnExtaw9>

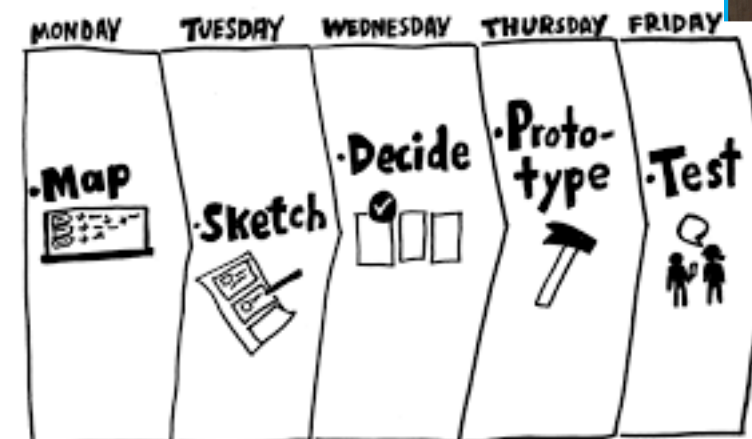
FREE GIFT REVIEW COPY FOR YOU ALONE. NO COUPON
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Our Promised Content

- **Creating Competitive Value Visions, quantitatively**
 - **Evaluating Designs in Multiple Value and Cost Dimensions**
 - **Decomposing ‘too big’, to ‘priority immediate value delivery’.**
 - **Case studies: startup winning \$1,000,000 by clear thinking**
 - **An advanced ‘Design Sprint’ for grownups.**
 - **A free ‘Innovative Creativity’ booklet for participants.**
 - **Customer Value:** “probably complex but not now”
 - Type: Elementary ? Objective.
 - Ambition: <customer delighted long term> <- Vesa (Founder) 18.3.14
 - Scale: % of defined [Customers/Users/Institutions] who retain or improve on defined [Delight Level] for defined [Periods]
 - Meter [Universities, Introduction Year] Sampling surveys at least 20% of Users
 - G1:Goal [Institution = University, Mode = Virtual, Subject = Maths, Size = 100,000, Funding = For Profit, Users = Students, Deadline = By End 2015 ??, Market = Saudi] at least 90% ?? <- SWAG TG
 - Tolerable [Institution = University, Mode = Virtual, Subject = Maths, Size = 100,000, Funding = For Profit, Users = Students, Deadline = By End 2015 ??, Market = Saudi] at least 70% ?? <- SWAG TG




HEALTHCARE SYSTEM IMPACT ESTIMATION				
	Accountable Rate	Work Day Product	Decision Support	Value Added
INCREASE PROPORTION OF Requests	100% (100%)	100% (100%)	100% (100%)	100% (100%)
Decrease Duration of Events Occurring	100% (100%)	100% (100%)	100% (100%)	100% (100%)
Decrease Time for Processing of Requests	100% (100%)	100% (100%)	100% (100%)	100% (100%)
Decrease Time to Meet Requirements	100% (100%)	100% (100%)	100% (100%)	100% (100%)
TOTAL DECREASED REQUIREMENT IMPACT	100%	100%	100%	100%
Budget	100%	100%	100%	100%
Time (10 months)	100%	100%	100%	100%
TOTAL BUDGET IMPACT	100%	100%	100%	100%
WARRANTY TO COST RATIO	100%	100%	100%	100%
	100%	100%	100%	100%





Elon Musk's Objectives



- Save Human Race
- Move Humans to Mars
- Save the Earth
- Reduce Bad Emissions
- Solar Energy
- Energy Storage
- Force Auto Electrification
- Cheaper Attractive El-cars
- Car designed for manufacturing
- Car designed for extreme safety

<https://www.youtube.com/watch?v=u0-pfzKbh2k>

<https://www.youtube.com/watch?v=u0-pfzKbh2k>

- Hierarchy of Objectives
- Lower short-term objectives *support* upper longer-term objectives
- Usually clear about roadmap, numbers, dates
- Track record of accomplishing



T+ 00:07:37

STAGE 2 TELEMETRY

SPEED

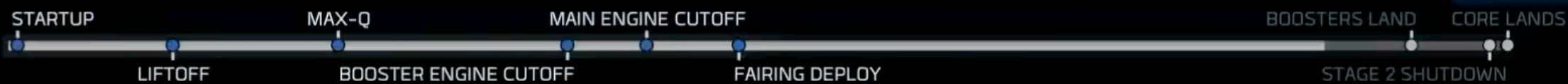
20884
km/h

ALTITUDE

176
km

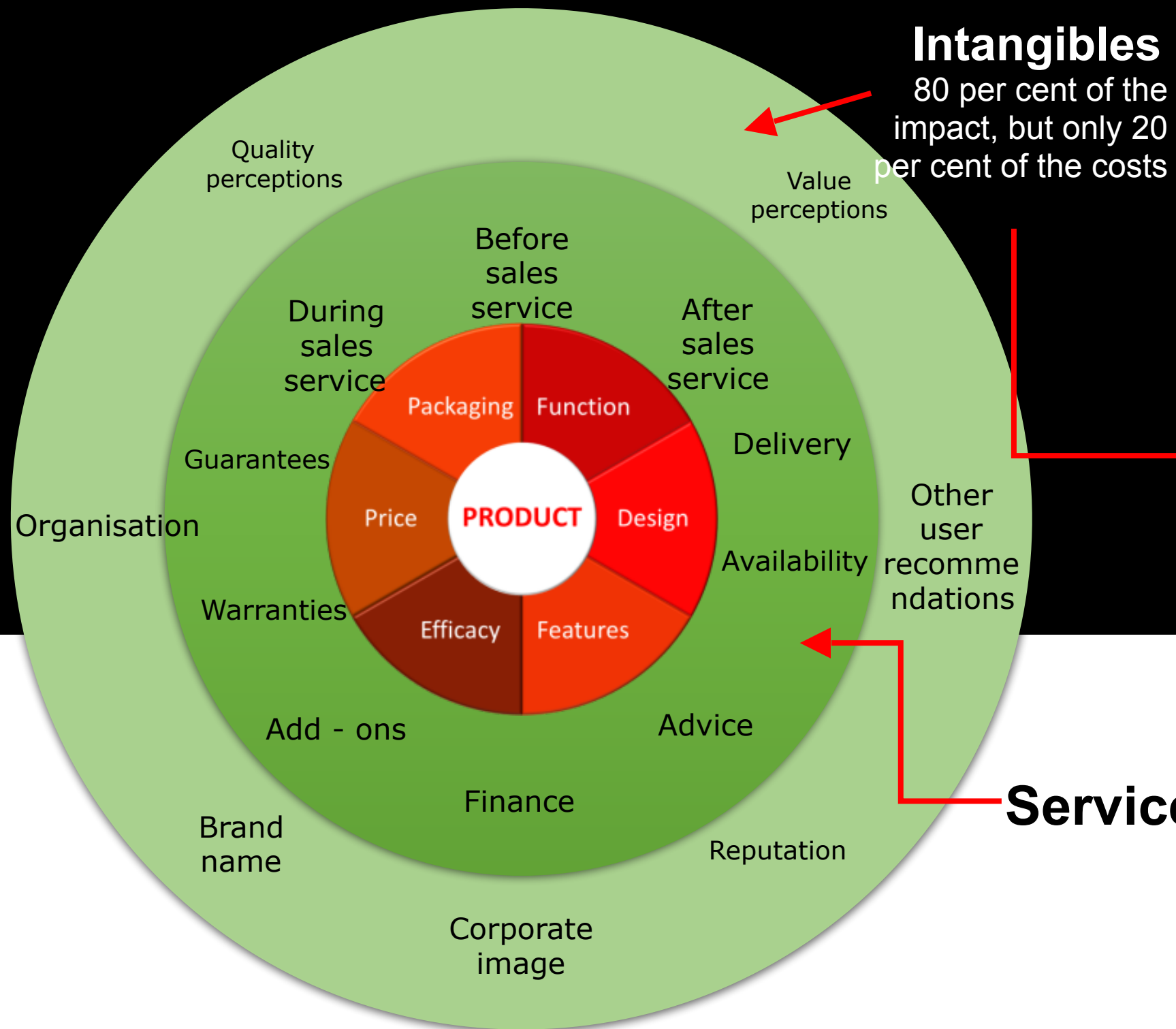


FALCON HEAVY TEST FLIGHT



SPACEX

The big picture: why we need systematic thinking about all these elements of the investment



Startup Failure and Causes

STARTUP FAILURE RATE STATISTICS

- Of all small businesses **started in 2014**:
 - 80 percent made it to the second year (2015);
 - 70 percent made it to the third year (2016);
 - 62 percent made it to the fourth year (2017);
 - 56 percent made it to the fifth year (2018). (only 27% in NOR)
- Given those numbers, a bit more than half of all startups actually survive to their fourth year, while the startup failure rate at four years is about 44 percent.

<https://www.ssb.no/fordem>

1. **Top 10 causes** of small business failure:

1. No market need: 42 percent;
2. Ran out of cash: 29 percent;
3. Not the right team: 23 percent;
4. Got outcompeted: 19 percent;
5. Pricing / Cost issues: 18 percent;
6. User un-friendly product: 17 percent;
7. Product without a business model: 17 percent;
8. Poor marketing: 14 percent;
9. Ignore customers: 14 percent; and
10. Product mistimed: 13 percent.



Creating Competitive Value Visions, *quantitatively*

- The core of your effort must be, the *critical few* value requirements
- they must be *quantified*, no exceptions
 - (clarity, tracking, responsibility, motivation, sync with designs, priority)
 - More detail: see your ‘Innovative Creativity’ book Chapter 1 “Setting Creativity Objectives”

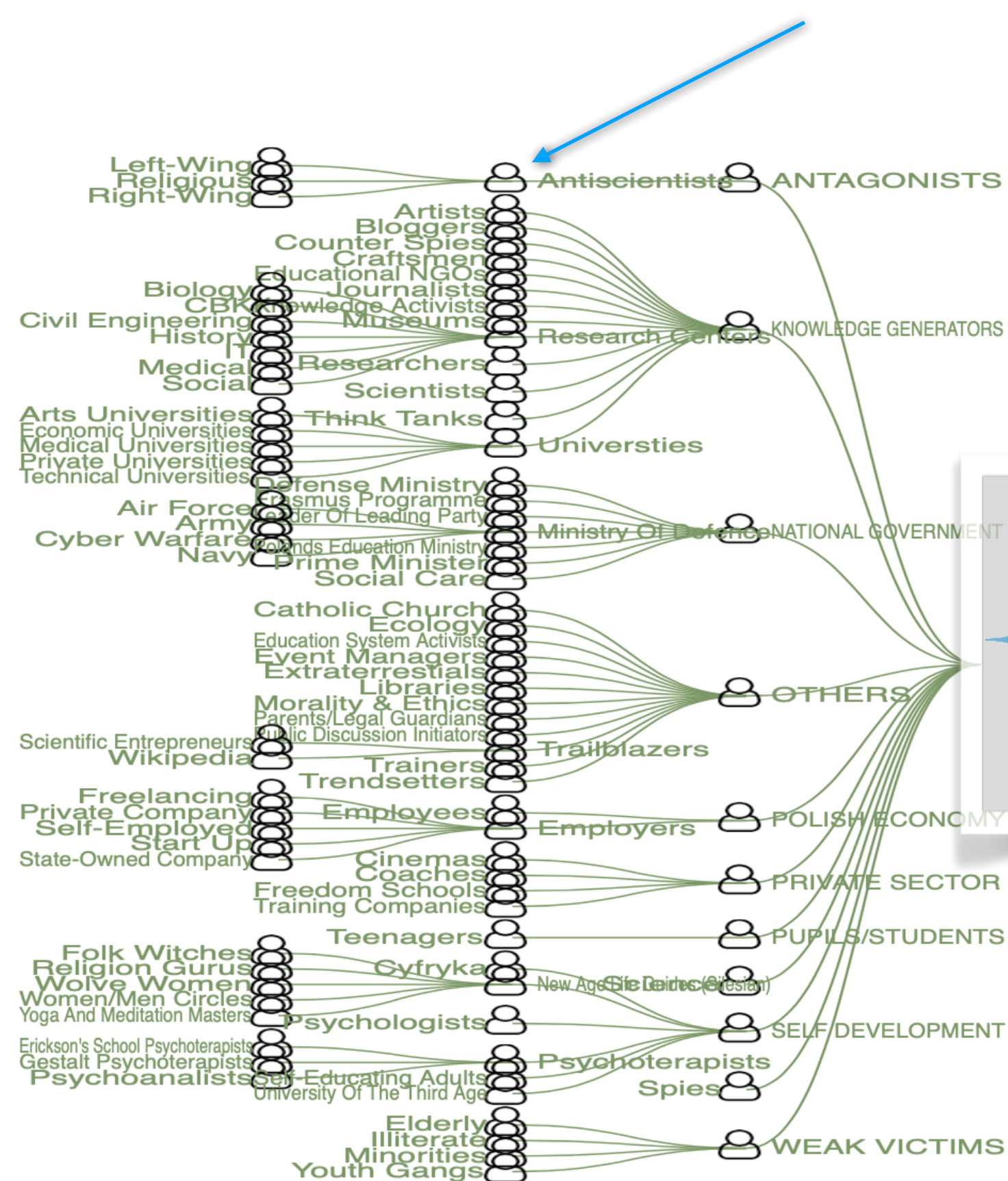


Real ‘Critical Values’

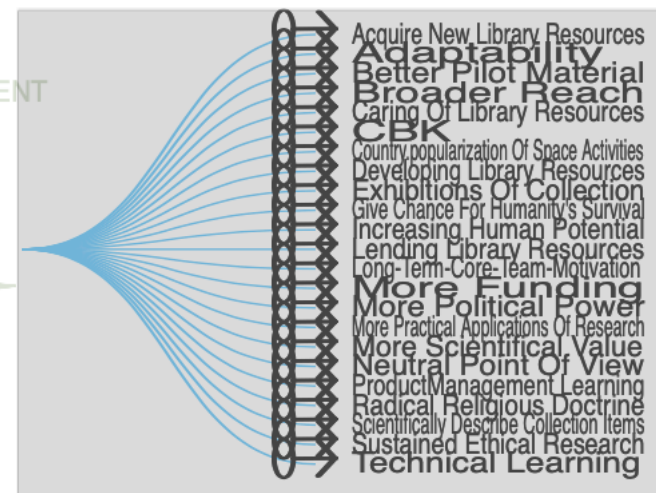
- Effectiveness: Understand the Effectiveness of their Teaching
- Drop Out Rate:
- Profitability:
- Scope: of content
- Employability:
- Distance Capability:
- Tool Real Deployment:
- Visibility of Learning: Transparency
- Ranking Effect:
- Collaboration Capability:
- **Competitive Differentiation**:
- Personal Adaptability:
- User Experience:
- Usability:

Source: Triba/claned.com
Startup Helsinki 2014

The KEY to the Stakeholder/Startup Relationship are Stakeholder Values



VALUES



STARTUP
TEAM

Information flow

STAKEHOLDERS

Examples from Polish Knowledge Spreading Project 2018

Value Requirements -> Solutions -> Values to Stakeholders

STARTUP TEAM



Solutions

- Aneta's Coding Dojo Sajližja
- Bootcamp
- Gamification
- Hak'Adapt
- Hardcore Maintenance
- Internship Program
- Learning On The Job
- Selfstudy Materials
- Simulation Game
- Stack Ranking

Learning By Experience



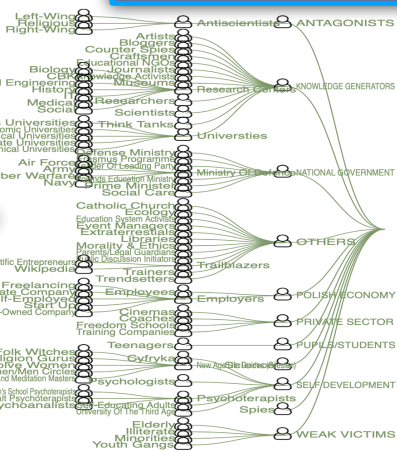
- Acquire New Library Resources
- Adaptability
- Better Pilot Material
- Broader Reach
- CBK
- Country popularization Of Space Activities
- Developing Library Resources
- Exhibitions Of Collection
- Give Chance For Humanity's Survival
- Increasing Human Potential
- Lending Library Resources
- Long-term-Core-Team-Motivation
- More Funding
- More Political Power
- More Practical Applications Of Research
- More Scientific Value
- Neutral Point Of View
- Product Management Learning
- Radical Religious Doctrine
- Scientifically Describe Collection Items
- Sustained Ethical Research
- Technical Learning

VALUES

Requirements	Learning By Exper...	Festivals For Spa...	Popularizing Scie...	Tom's "...	Sum
Radical Religious Doctrine	Status: 20 → Wish: 10 % of #All ... Δ%: -40%	0%	95%	50%	ΔΔ%: 105 %
Adaptability	Status: 50 → Wish: 75 % Δ%: 120%	0%	20%	0%	ΔΔ%: 140 %
Country popularization Of S...	Status: 5 → Wish: 80 % of [Peop... Δ%: 0%	133%	????	0%	ΔΔ%: 133 %
Increasing Human Potential	Status: 50 → Wish: 50 % of [Pers... Δ%: 150%	3%	????	25%	ΔΔ%: 178 %
Long-Term-Core-Team-Motivation	Status: 50 → Goal: 30 % Δ%: 50%	0%	????	175%	ΔΔ%: 225 %
Sum Of Values:	Σ%: 280 % 280	136 % 416	115 % 531	250 % 781	
Technical Debt	Status: 100 → Budget: 80 % Technic... Δ%: -100%	0%	100%	-50%	ΔΔ%: -50 %
Space Center Budget	Status: 20m → Budget: 0 Δ%: 3%	11%	????	0%	ΔΔ%: 14 %
Sum Of Development Resources:	Σ%: -97 % -97	11 % -86	100 % 14	-50 % -36	
Value To Cost:	-2.90	12.40			

Evaluations

Stakeholders



1. The quantified stakeholder value set is input to the development team.
2. The team suggests solutions, that they hope will deliver the value levels.
3. The solutions are evaluated initially on the Value Table,
4. and when prioritized (based on value, costs, risks),
5. the team will attempt to deliver the solutions to stakeholders
6. after which we will measure actual values, costs, and possibly
7. decide to change the solutions to better deliver values, at lower costs, before
8. repeating the changed solutions for better effects,
9. or scaling up (using the solutions more extensively)

Real Startup Example of Quantification of A Critical Value (Triba, claned.com)

- Competitive Differentiation
- Type: Complex Top Level University Objective
 - Version: 18.03.2014 11:38
 - Owner: CEO (Mervi)
 - Ambition: “disrupt the education industry” <- Vesa (Founder) 18.3.14
 - Includes: <subattributes>

- Market Penetration Rate:
- User Growth Rate:
- Relative Share Price:
- Bottom Up Adoption:
- Education Policy Changes:
- Change of Education Methods:
- A N D ...

- Customer Value: “probably co

– Type: Elementary ? Objective

They said:
If we had done this 6 months ago,
we would have saved
the last 6 months wasted effort.

If this seems ‘complicated’ to you,
it took about 1 hour to do,
consider the alternative:
6 months wasted effort for the startup.

Some people would rather fail in their startup (56%/4 years actually
than to take the intellectual effort to succeed

= By End 2015 ??, Market = Saudi] at least 70% ?? <- SWAG IG

Evaluating Designs in Multiple Value-and-Cost Dimensions

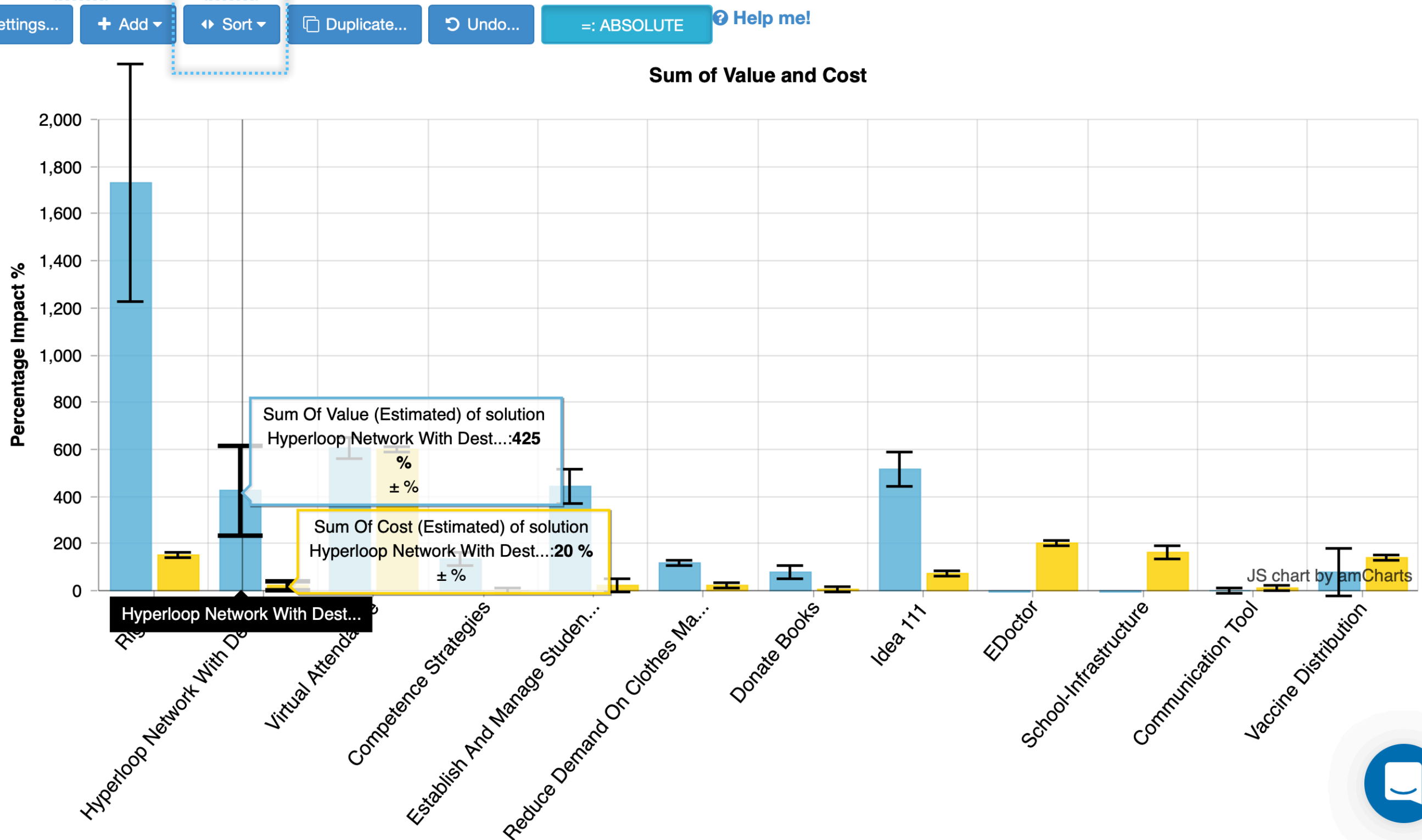
- All potential design ideas need to be *evaluated quantitatively*
- their **impact** on your value requirements
- and their **costs**
- **Why? ***
 - reduce failures
 - get results faster
 - agile prioritization
 - learning step by step
 - More detail: see your Innovative Creativity book Chapter 5 “Evaluating Strategies... using Impact Estimation Tables”

* claims based on documented experiences such as at Confrontit, NHS and others.

HEALTHCARE SYSTEM IMPACT ESTIMATION				
	Automate Rules	Web Self Service	Decision Support	Total Impacts
Increase Transmission of Requests <small>(30 minutes → 10 minutes)</small>	10 minutes 100%	3 minutes 100%	-	200%
Decrease Number of Errors Occurring <small>(353 per week → 30 per week)</small>	100 errors 80%	< 50 90%	-	170%
Decrease Time for Processing of Requests <small>(70 minutes → 10 minutes)</small>	35 minutes 70%	-	< 10 minutes 90%	160%
Decrease Time to Learn process <small>(1 day → 1 hour)</small>	-	1 hour 100%	10 minutes 103%	203%
TOTAL DESIGN REQUIREMENT IMPACT	250%	290%	193%	
Budget <small>(£40,000)</small>	50% +30%	25% +10%	25% +10%	100% +50%
Time <small>(6 months)</small>	50% +20%	20% +10%	30% +15%	100% +40%
TOTAL BUDGET IMPACT	100% +50%	45% +20%	55% +20%	
BENEFIT TO COST RATIO	250/100 = 2.5	290/45 = 6.44	193/55 = 3.51	

Real NHS Case: Man-Chie Tse & Ravinder Singh Kahlon
see slide notes for links. Gilbfest slides.

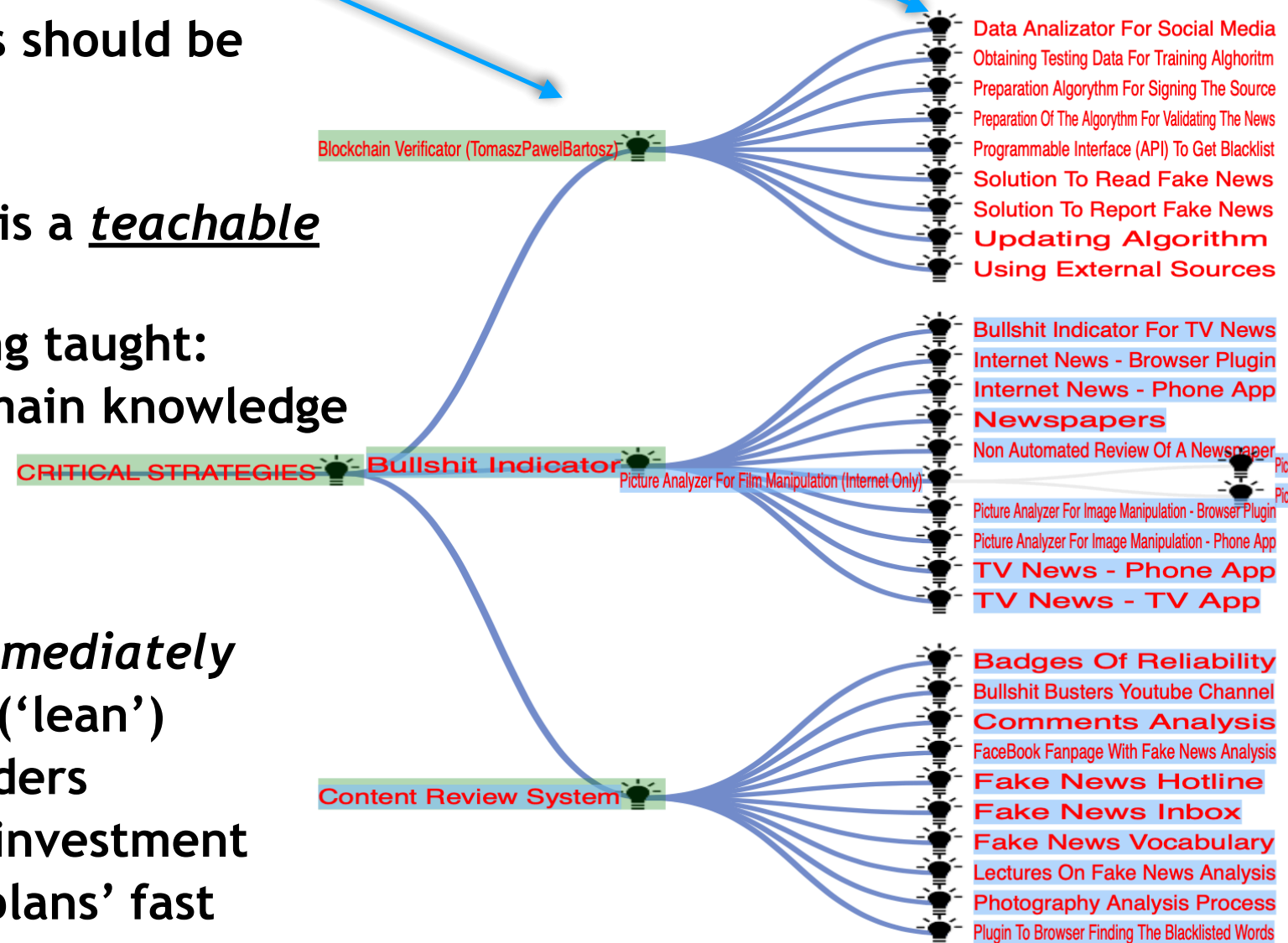
Presenting 'Design Value-and-cost impacts', with risks



The bar chart is from 2017 OSWA Workshop and using tool needsandmeans.com,
Project called = Global Education and Health
Sorted by High Value/cost wrt worst case

Decomposing ‘too big’, to ‘priority immediate value delivery’.

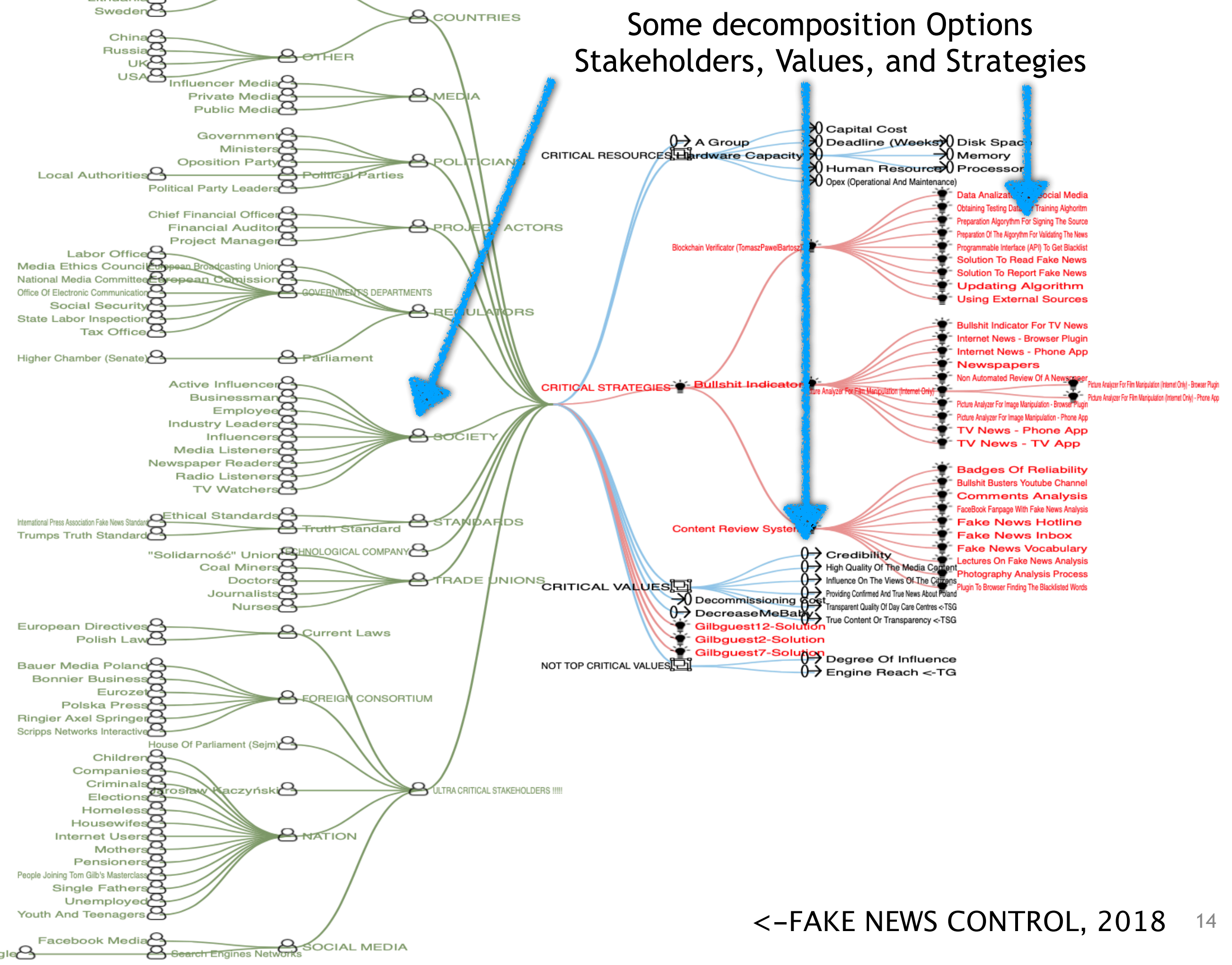
- all ‘big designs’ *can and should be* decomposed into small (weekly) implementations
- the *most critical* values/costs designs should be implemented *early*
- if you do not know how to do this, it is a teachable discipline*.
 - Smart people can do it without being taught:
 - perseverance, imagination, and domain knowledge works well.
- Why ?
 - values/costs should be very good *immediately*
 - failed ideas can be corrected *early* (‘lean’)
 - visible results* for shareholders/funders
 - clear value/money *attracts* capital investment
 - learning fast*, and ‘tuning forward plans’ fast
 - ‘startup-on-shoestring’ is possible
 - sub-contractor *control* value/money
 - 19/20 startup failure is structurally *impossible*
 - if you shut down, after failed delivery steps



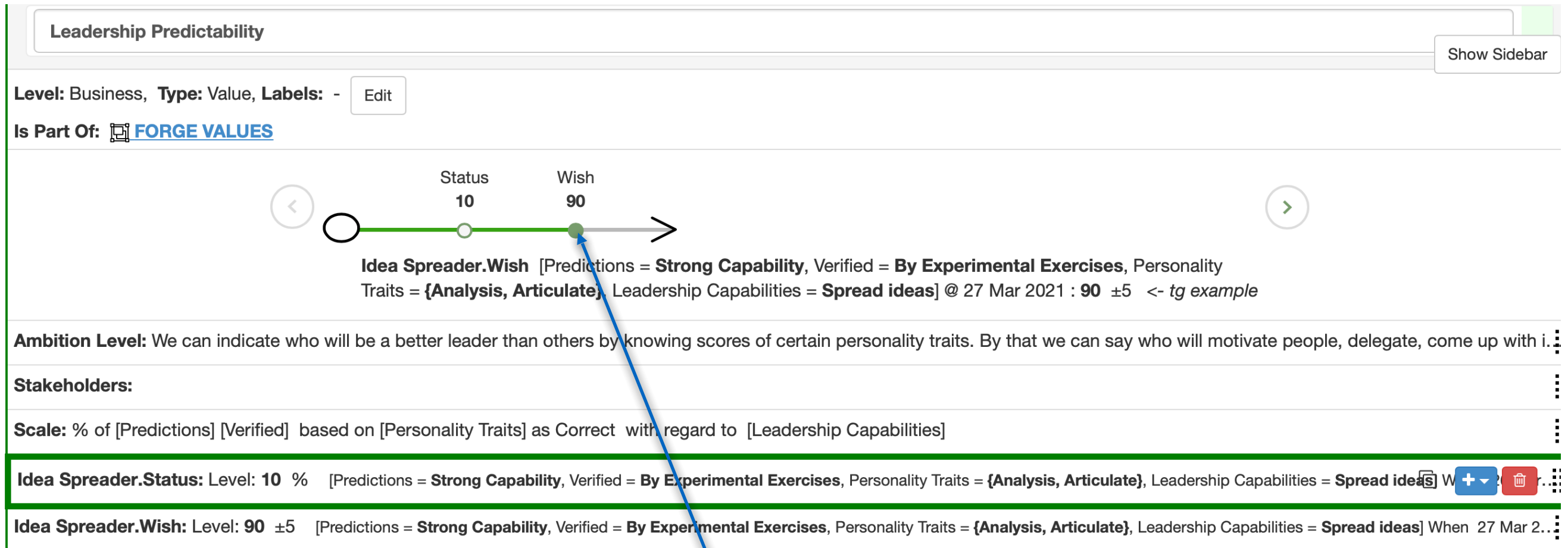
<-FAKE NEWS CONTROL, 2018

- * <https://tinyurl.com/VPDecomposition>
- * and ‘Innovative Creativity’ book Chapter 6, “Decomposition”

Some decomposition Options Stakeholders, Values, and Strategies



Decomposition of a Value, by using 4 'Scale Parameters'



This
target is a narrow slice
but a critical slice
of value delivery

source: Cognition Forge Startup Oslo March 2019, example

“Leadership Predictability” scale parameters, with sub-dimensions. a decomposition technique, value level

Level: Business, Type: Value, Labels: - Edit

Is Part Of: **FORGE VALUES**

Idea Spreader.Wish [Predictions = **Strong Capability**, Verified = **By Experimental Exercises**, Personality Traits = {**Analysis, Articulate**}, Leadership Capabilities = **Spread ideas**] @ 27 Mar 2021 : 90 ±5 <- tg example

Ambition Level: We can indicate who will be a better leader than others by knowing scores of certain personality traits. By that we can say who will motivate people, delegate, come up with i. ...

Stakeholders: ...

Tag.Scale: by tomgilb - Mar 27th 2019, 00:50 0

Scale Description: ?

% of [Predictions] [Verified] based on [Personality Traits] as #Correct# with regard to [Leadership Capabilities]

Correct: defined as:
conforms well with any real demonstration, test or observation, as judged by our client.

Leadership Capabilities: defined as:
Motivate People, Delegate, Originate Ideas, Spread ideas

Personality Traits: defined as:
Listener, Method User, Analysis, Friendly, Articulate, Respected, ...

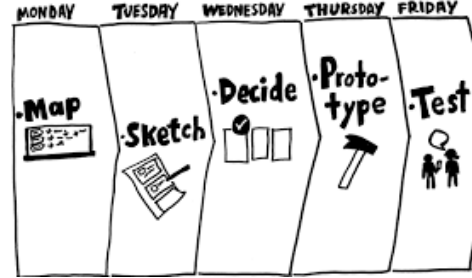
Predictions: defined as:
Strong Capability, Bad Capability, Uncertain Capability, Trainable

Verified: defined as:
By On Job Feedback, By Experimental Exercises, By Pre-Known Capability, By Individual's Own Evaluation of Self, ...

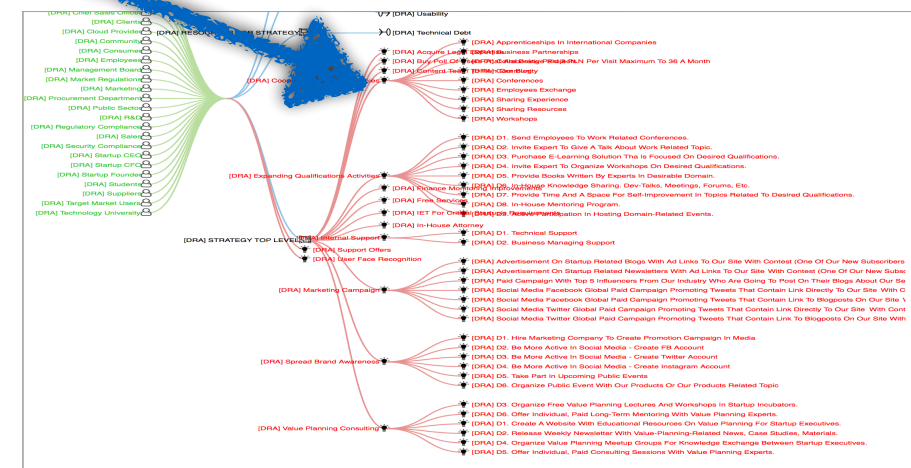
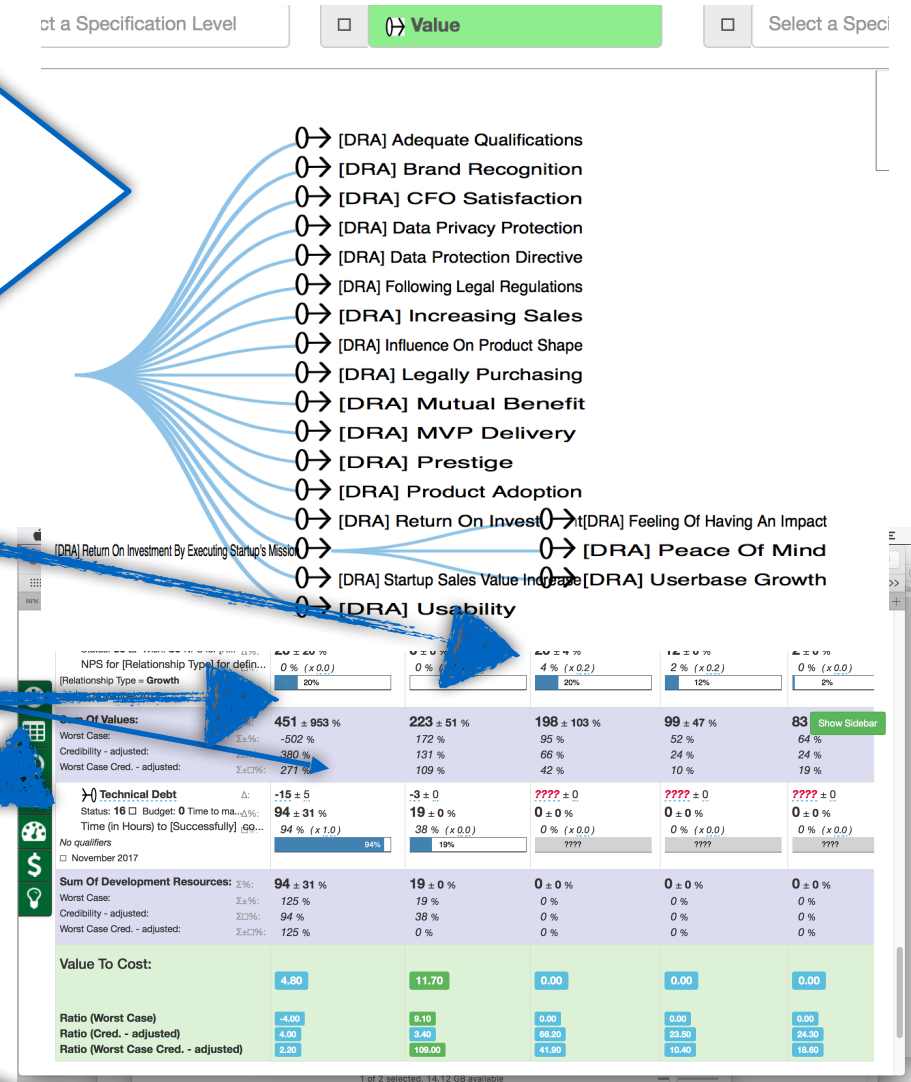
Time Units: Display Units (optional, max. 10 characters)

source: Cognition Forge Startup Oslo March 2019, example

An advanced 'Design Sprint' for grownups.



- The Startup Week*. Agile Value Delivery
- Monday
 - Quantify critical stakeholder values
- Tuesday
 - Identify top 10 strategies or designs to reach the values
- Wednesday
 - Rate strategies versus values and costs, and risks on an Impact Table
- Thursday
 - Decompose best strategy, and rate value/costs or details to choose next week's value delivery
- Friday
 - meet with managers to get OK
- Next week (and every week later)
 - deliver some measurable stakeholder value
 - measure results, costs
 - learn about problems early
 - adjust designs for future
- * see 'Polish Export' examples in 'Innovative Creativity' book chapter 9. Done over 2 days with 60 people in 20 teams. Warsaw, Startberry (startup Incubator)



Project Startup versus Design Sprint

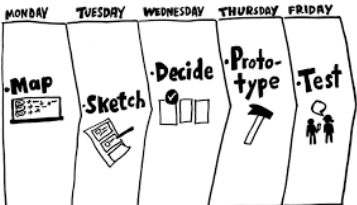


Planguage
Evo



- Engineering Based
- Systems Applicable (UX)
- All Values Quantified
- Risk Mgt (\pm .Cred, Prty)
- Scale-Free
- Decades of Experience
- Research Published: HP
- Many publ.Case Studies
- AI Prioritization Val/€
- Design estimates V&€
- Actual incr. measures
- Digital Planning Long-Term

- Programming Craft
- Software & UI Limited
- Values Not Quantified
- No Explicit Risk Mgt.
- Not proven large scale
- Hot new idea
- No known *research*
- Few find cases, yet
- Role player decides pri.
- No estimates
- Dodgy Prototype



Design Sprint ‘Claimed Benefits’ <-Jake (of course YOU are skeptical, and know this.)



8 incredible Design Sprint benefits for your business

Here are the 8 amazing Design Sprint benefits you get in your business by employing this methodology of [Google](#):

1. Design Sprint helps you save time and money

Design Sprint is designed to work quickly and intensely to get a solution to a business problem through design.

By using Design Sprint you reduce the time you spend on the design process and the process of defining your product, going from months to days

This is a great benefit because you save a lot of time and money and allows you to define a validation plan based on the feedback from your users.

2. Design Sprint Quickly Reduces Product Development Cycles

Derived from the above, development times are dramatically reduced, as Design Sprint work on a connecting problem with the solution. This helps you to test whether an idea works or not, without developing products with very long production cycles (Idea, Design, Approve, Develop, Launch and Validate).

With the Design Sprint you become a more agile organization

Before investing in the development of your product or a new functionality that requires an expensive process you can dedicate 5 days so that the team understands the problem that your company is facing, designing the solutions, creating a functional prototype and validating your ideas in a matter of hours. Becoming a more agile organization.

3. Real feedback with Design Sprint

Knowing the feedback of your product is fundamental to developing successful products. Many times when we get this information is when we have finished the project.

With the Design Sprint, you know firsthand and quickly the real feedback from your customers. This feedback is crucial because it helps you improve your product or service at the same time you design it

On the other hand, your team is actively working on the process, as the production cycle involves different sources of information within your organization.

4. Validate your business ideas with Design Sprint

Without validation, it is difficult for ideas and products to work. That is precisely what you will do on the last day of the Sprint in a very concrete way.

Through Design Sprint you can design the validation plan of the business idea or functionality of your product

Being clear how the process will be, the time you are going to invest and the type of results with which we can continue the process of transferring your product to the market.

5. Generates business and innovation.

Design Sprint gives your team a way of working to solve complex problems in a week.

So you can achieve a new approach to the project that would have taken months, even years

6. Align expectations with your team

Making all departments share knowledge, needs, and strategy so that the result is a solution that satisfies and meets needs.

Being able to make your step to deploy is a cycle of continuous product integration

7. Help you measure

The sprint design uses measurement processes in the different phases that the methodology uses.

What allows you to measure the results obtained at the end of the process, as well as the impact of the same on your business and on the equipment and surplus generated during the process

8. An agile and fast methodology that you can apply to your business

Once you internalize the Design Sprint methodology you can use it and coordinate it with other processes that you already have established in your project or business.

Typically, the first time you make a Sprint Design is tiring and difficult.

We recommend that you count with the help of a Sprint Master Certified to achieve these incredible results

- **words words words.... no evidence, facts, numbers, dates, names <- Tom**

Skeptical Observations <-TSG

- These claims are made by a **seller** of ‘Design Sprint’ training and certification service (letshackity.com)
- Most of the terms and concepts have **poor definition**, and are *highly ambiguous* (examples)
 - Design, Align Expectations, Investing (Product Dev), Complex Problems, measure the results, agile methodology, validation, and many more.
- Not one single **number** is offered to indicate the magnitude of improvements
- No clear **baseline** (who is going to get improved) is indicated
- No **references to real** case studies with results, **costs**, problems
- No comparison with any other **known methods**
- No **links or references** to anything
- Lots of **causal assertions**, none proven
- “This feedback is crucial **because** it helps you improve your product or service at the same time you design it”
- No indication or example of the types and magnitude of

<http://www.letshackity.com/en/design-sprint-benefits-business-innovation/>

Tesla: “20 production improvements per week” = Agile Car Manufacturing (50% Hardware) . This is the same as our ‘Evo’, Dynamic Design to cost of which the Startup week is the first planning step.

Elon Reeve Musk - Chairman & Chief Executive Officer Tesla.

"Okay, I think that's a pretty open-ended questions, but – we have a philosophy of just continuous improvements, so every week there are approximately 20 engineering changes made to the car.

So it's not nearly as discrete as you're alluding to. With other manufacturers, they tend to sort of bundle everything together in a model year.

In our case, it's a series of rolling changes. So model year doesn't mean as much. There are cases where that step change may be a little higher than normal as, for example, with having the Autopilot camera, radar, and ultrasonics.

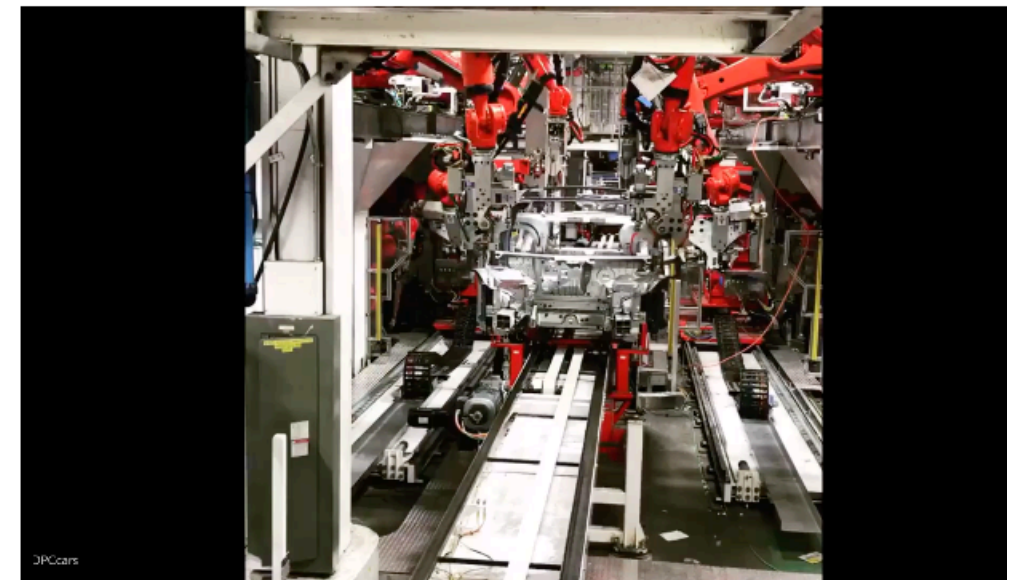
But we try to actually keep those step changes as small as possible.

And so that – I mean, essentially like the common questions that I get is from friends, they say, "when should I buy a Model S?" and my answer's always "right now," because – and they say, "well, aren't you going to make a better one in six months?" I'm like, yeah, of course.

But if their goal is to only buy a Model S when there aren't significant improvements happening, then they will never buy one."

Source Gilb, Value Planning book, Quote 5.3 A. Musk on eternal continuous Tesla improvement. $20/\text{week} \times 50 \text{ weeks} = 1,000$ improvements per year. Source: <http://seekingalpha.com/article/3642146-tesla-motors-tsla-elon-reeve-musk-on-q3-2015-results-earnings-call-transcript?page=2&p=qanda&l=last> November 3 2015.

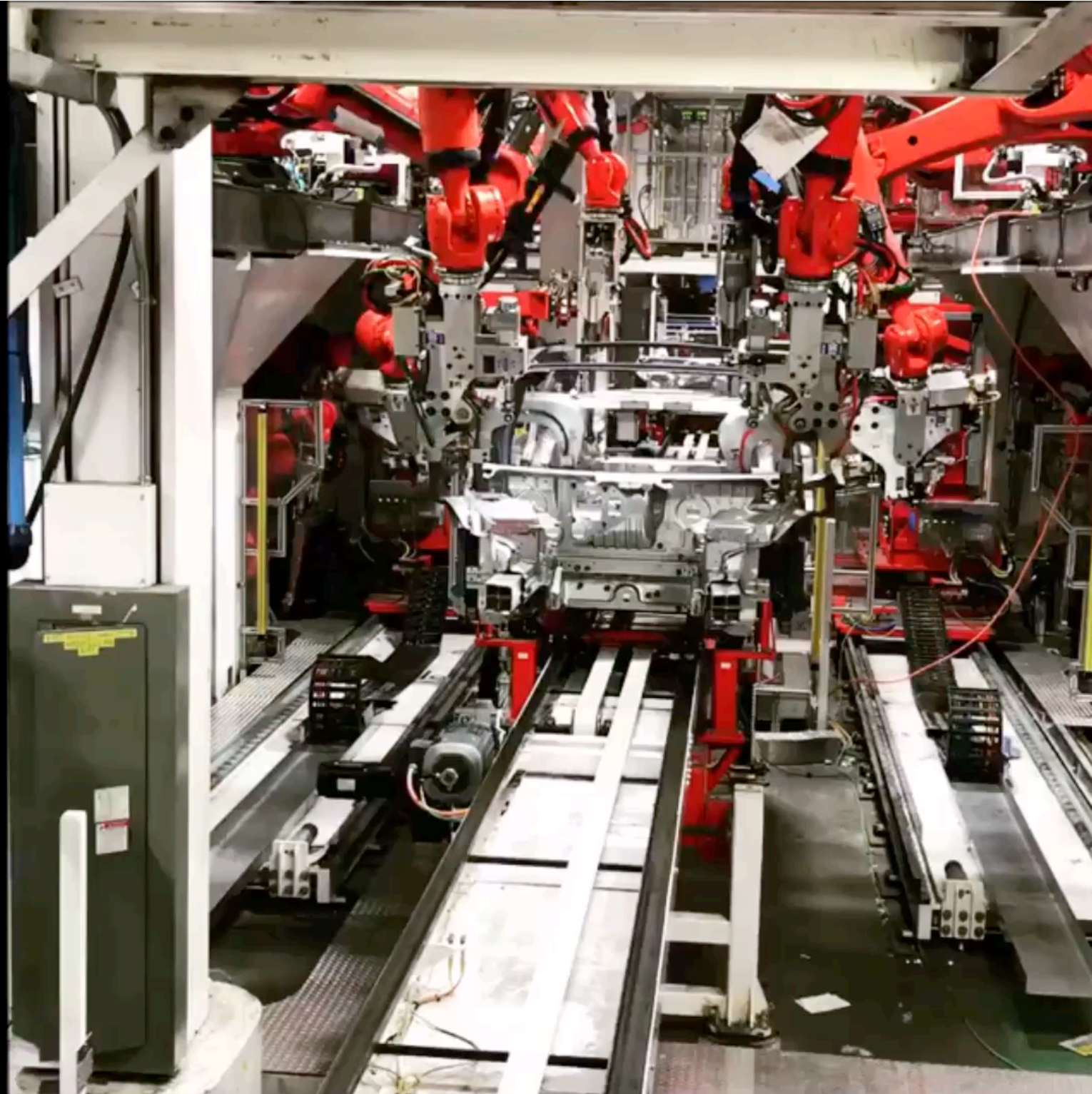
The point here
is about
1. very small incremental value
delivery steps
2. decomposition into such
small steps



Actual Video on Next slide

Musk says in this video
Model 3 has 10,000 parts

Model 3 was 'Designed for Production'



DPCcars

<https://www.youtube.com/watch?v=ukthS5yjYRU>

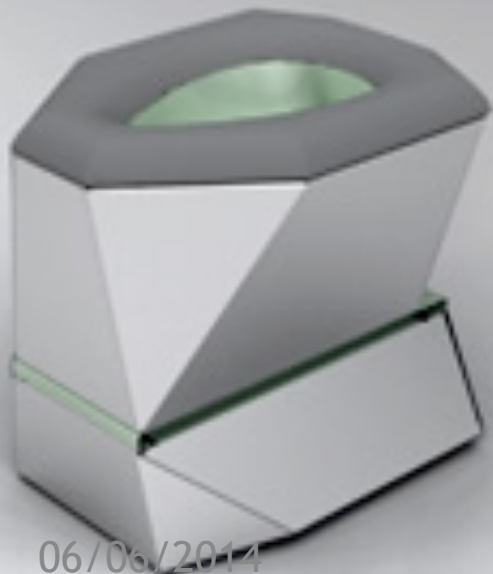
Loo Watt Case

Successful Innovation Using
Planguage





LOOWATT: A NEW PARADIGM IN SANITATION



06/06/2014



Key Values: Quantified

Improve
Sanitation

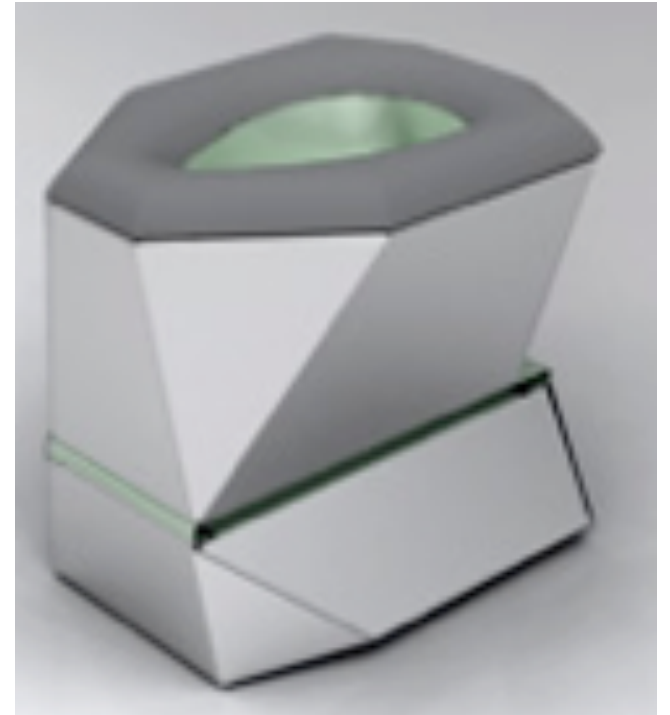
Sustainability
and
Longevity

Story and
Data

Managing
Risk

Methodology

Diffusing
Knowledge



An Energy Producing Waterless Toilet System

Impact Estimation Table for Gates GCE Project

Designs / Actions	Detailed risk assessment with associated impact estimation table for methods of mitigation								etc....
	Research trip to madagascar (x3)	Detailed design research	Building financial models at community level	Research into existing sanitation projects	Creation of knowledge 'database'	Codification of our acquired knowledge			
Key Values	Impact (% progress towards target from given action)								Total Impact
Improve Sanitation Target: 25% - 75% Unit: Waste collected / waste produced by user group	10	20	40	18	15	0	0		10
Sustainability and Longevity Target: 0\$ - 0\$ Unit: Cost to single user per month	0	5	20	50	10	0	0		8
Story and Data Target: 0.4 - 0.8 Unit: Average of factors rated 0.0 – 1.0	5	35	20	15	3	15	5		9
Managing Risk Target: 0.2 – 0.8 Unit: Average of factors rated 0.0 – 1.0	50	20	20	15	15	0	3		12
Methodology Target: 0.4 – 0.8 Unit: Average of factors rated 0.0 – 1.0	15	0	0	0	0	0	10		2
Diffusing Knowledge Target 0.15 – 0.8 Unit: Average of factors rated 0.0 – 1.0	0	8	0	0	10	50	15		8
Total impact of design / action	80	88	100	98	53	65	33	0	
Initial cost of design / action (person days)	8	30	20	15	5	15	4	0	
Benefit to cost ratio	10	2.9	5.0	6.5	10.6	4.3	8.3	####	

Nick Coutts Presenting

THE DESIGN LONDON STORY

An Energy Producing Waterless Toilet System

Impact Estimation Table for Gates GCE Project

Key Values	Designs / Actions							Total Impact	Safety Factor
	Detailed risk assessment with associated impact estimation table for methods of mitigation	Research trip to madagascar (x3)	Detailed design research	Building financial models at community level	Research into existing sanitation projects	Creation of knowledge 'database'	Codification of our acquired knowledge etc...		
Improve Sanitation Target: 25% - 75% Unit: Waste collected / waste produced by user group	10	20	40	18	15	0	0	103	1.03
Sustainability and Longevity Target: 0\$ - 0\$ Unit: Cost to single user per month	0	5	20	50	10	0	0	85	0.85
Story and Data Target: 0.4 - 0.8 Unit: Average of factors rated 0.0 - 1.0	5	35	20	15	3	15	5	98	0.98
Managing Risk Target: 0.2 - 0.8 Unit: Average of factors rated 0.0 - 1.0	50	20	20	15	15	0	3	123	1.23
Methodology Target: 0.4 - 0.8 Unit: Average of factors rated 0.0 - 1.0	15	0	0	0	0	0	10	25	0.25
Diffusing Knowledge Target: 0.15 - 0.8 Unit: Average of factors rated 0.0 - 1.0	0	8	0	0	10	50	15	83	0.83
Total impact of design / action	80	88	100	98	53	65	33		
Total cost of design / action (person days)	8	30	20	15	5	15	4		
Benefit to cost ratio	10	2.9	5.0	6.5	10.6	4.3	8.3		

Design London - Royal College of Art | Imperial College London



FEEDBACK FROM LOOWATT

- They *continued* to use the planning method throughout the 14 month project
 - Because it helped *keep them on track to the real critical objectives*
- They highly recommended to their 20 parallel incubator projects, that *they* should also use these methods, for planning their startups



10. 2013
Smarta100 Awards
2013 – Top 100 Small
Businesses in the UK,
Biggest Social Impact
Category



09. 2013
The Buckminster
Fuller Challenge 2013
– Semi-finalist



07. 2013
Bill & Melinda Gates
Foundation – Grand
Challenges
Explorations grant
phase II



06. 2013
The Observer –
Observer Ethical
Awards



02. 2013
Climate Change Week
award – Best Product
2013



01. 2013
Innovate UK –
Rushlight Innovation Award



01. 2013
Technology Strategy
Board – SMART Grant



01. 2013
Innovate UK –
Rushlight Organic
Resource Award



10. 2012
ClearlySo – Social
business of the Year



04. 2011
Bill & Melinda Gates
Foundation – Grand
Challenges
Explorations grant
phase I

Winners!

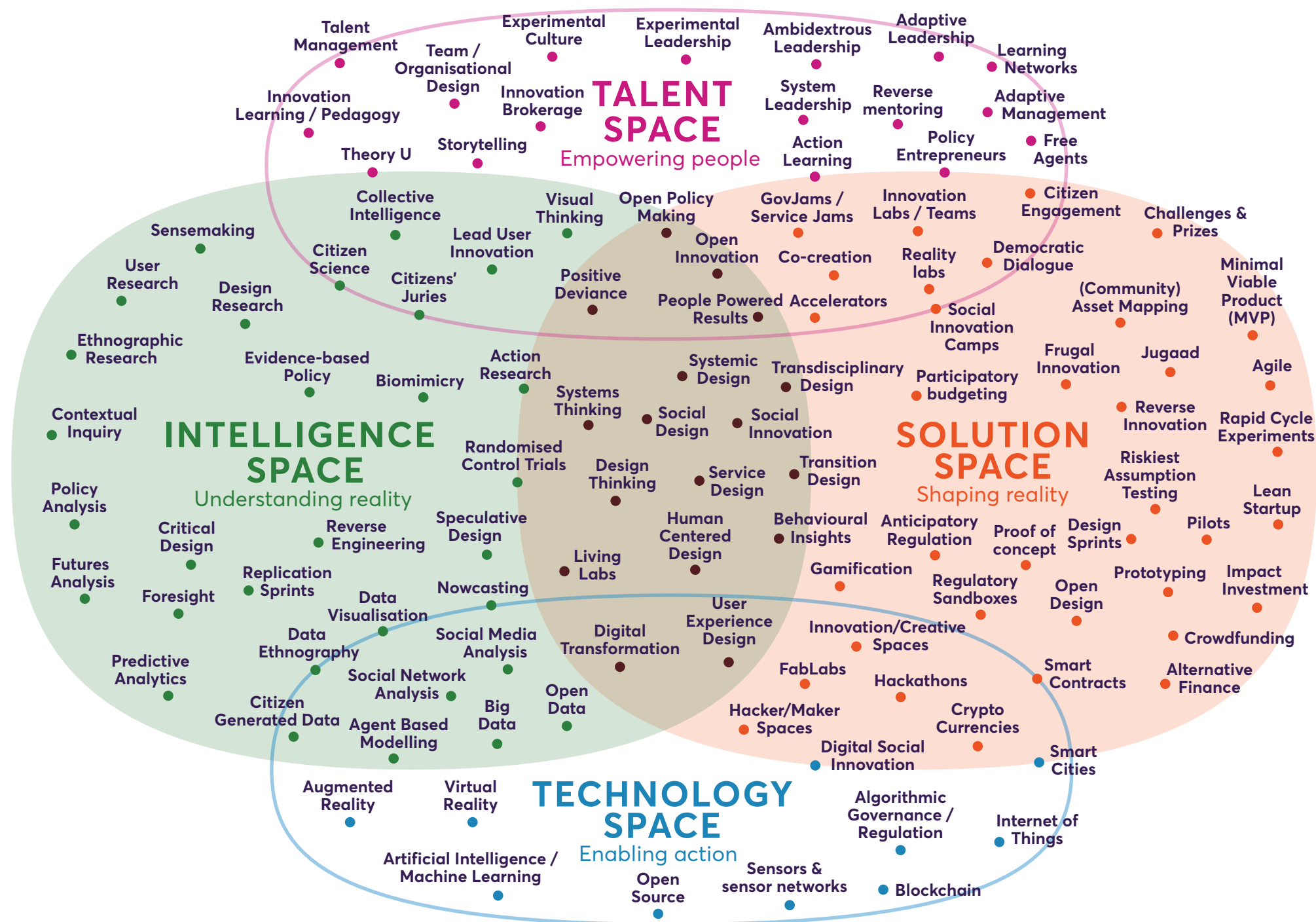


- The Bill & Melinda Gates Foundation has awarded Loowatt Ltd a \$1 million grant to expand its pioneering waterless toilet systems in Madagascar and Sub-Saharan Africa.
- 13.09.2013

Looking for an Innovation Method?

Landscape of Innovation Approaches

Version 2 (December 2018)



nesta

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Document version: June 2017

<https://www.nesta.org.uk/blog/landscape-innovation-approaches-introducing-version-2/>

End ?

THE PLANGUAGE (SEE INNOVATIVE CREATIVITY BOOK I
OFFERED YOU FREE)
AND [NEEDSANDMEANS.COM](https://www.valplan.net) (<https://www.valplan.net>)
TOOL
SHOULD GIVE THE STARTUP
A WAY TO KEEP TRACK OF ALL THE CONSIDERATIONS
NECESSARY FOR SUCCESS, AND SURVIVAL
THERE ARE VERY MANY THINGS TO 'WORRY ABOUT'

Innovation

Useful, Practical, Purposeful

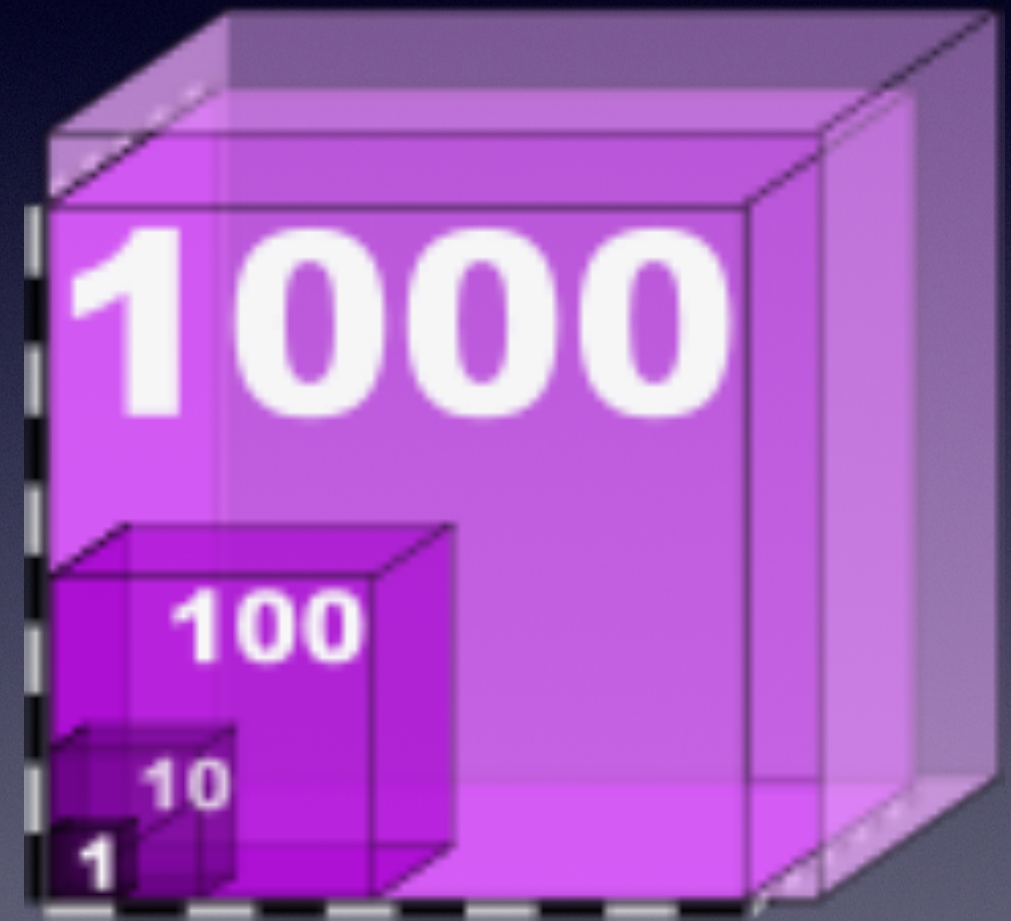
PL Concept *679 Dec. 2 2014

Order of magnitude, or better,
improvement
in performance/cost efficiency,
of stakeholder-valued
system attributes.

Innovation

How big?

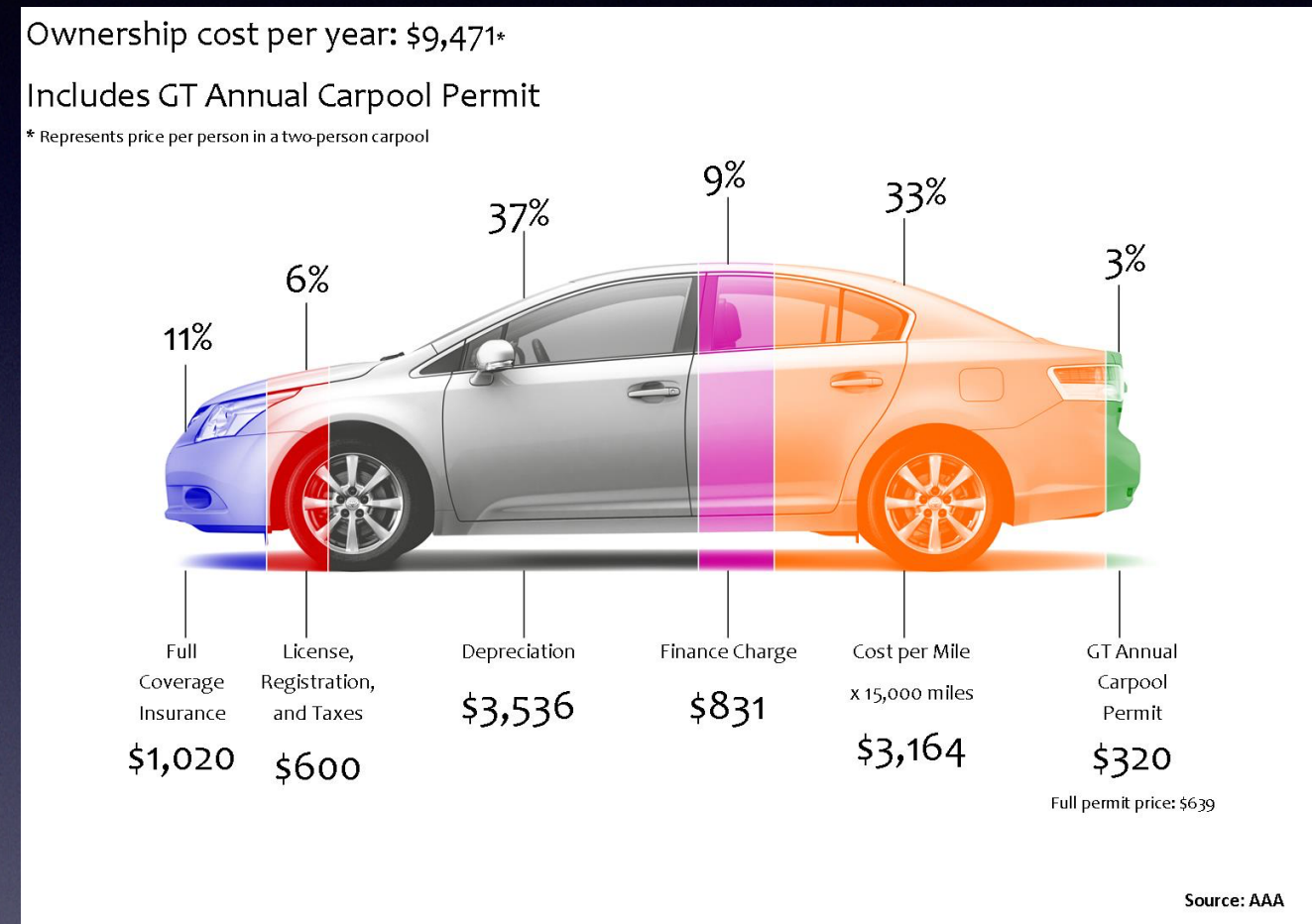
- The 'order of magnitude (10:1)' concept is an arbitrary, but useful, concept in the definition.
- It is our way of being somewhat more precise about the concept of 'significant' (improvement).
- In given situations we can certainly argue that far less (25%, 250% improvement) would be considered 'innovation.
- So the degree of improvement needs to be argued in defined contexts.
- However, any '10 to 1' improvement in the ratio of performance and costs, will almost invariably be considered **true innovation**.
- The less than this it is,
 - the less 'innovation' degree.



Innovation

The COSTS aspect

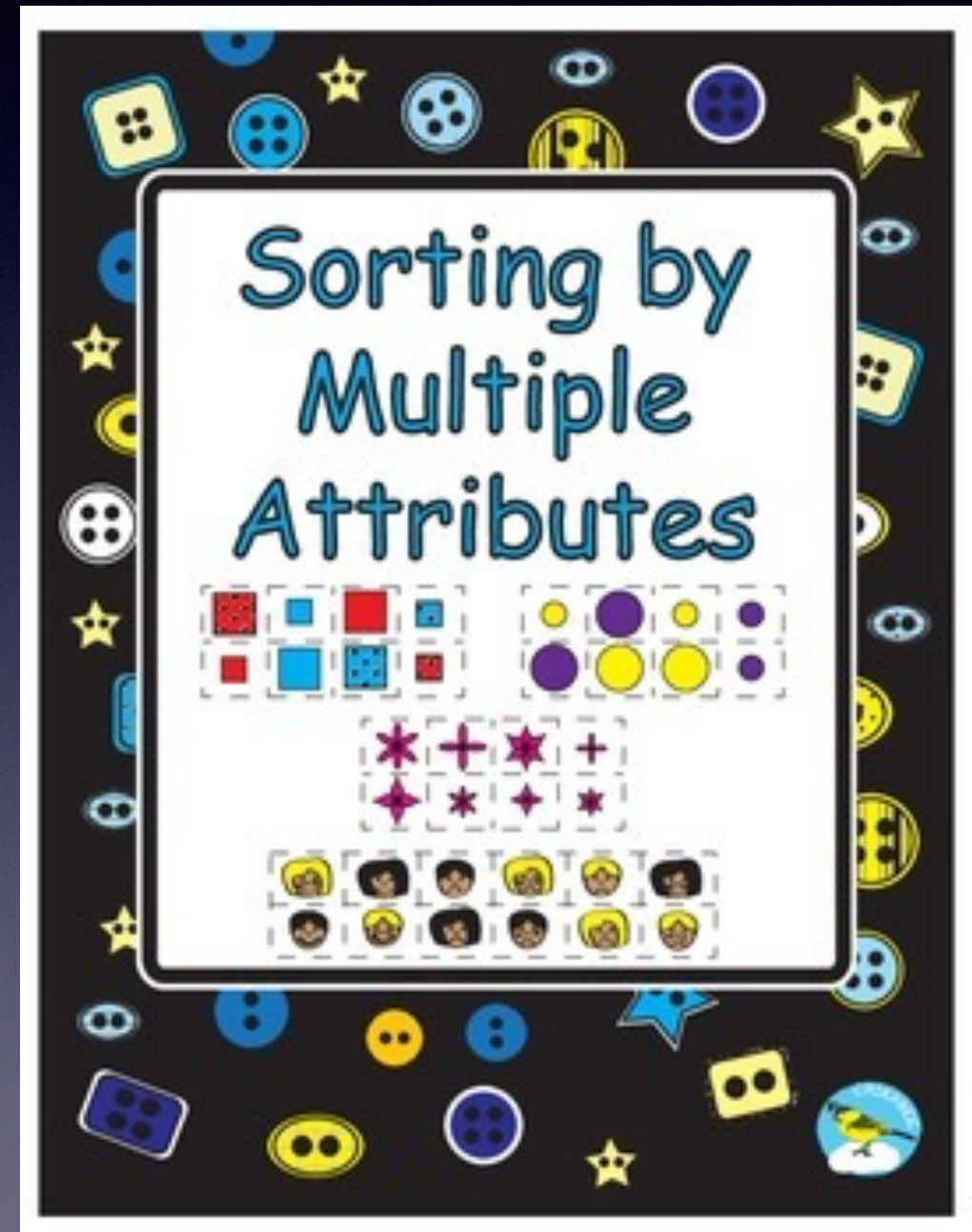
1. Notice that we consciously avoided the trap of **only** considering the performance increases (and it can be several **concurrent** performance dimensions) alone.
2. We believe that practical innovation will consider the **costs** (plural!) incurred, as an integral factor to be evaluated in considering the true degree of innovation.
3. I.e. big performance improvements are interesting innovation, but doing so at half the price, rather than infinitely costly is 'even more innovative' in the real world.



Innovation

Multiple Attributes Thinking

1. Note that we very consciously include the notion of simultaneous improvement in any **useful set** of performance characteristics (for example *Usability, and Security*),
2. together with any **useful set** of cost characteristics (for example *Capital Cost, and Installation time*).
3. The more attributes improved, the more 'innovation'.
4. All improvements deserve evaluation and credit.



Some Principles of Useful Innovation Resulting from
Practical Purposeful Creativity
and also
Some measurable attributes of Innovation

UNIVERSALITY: 1. Innovation is more useful when it applies to more circumstances

ETERNALITY: 2. Innovation is worth more if it can be applied for a long time after learning it

VALUE: 3. Innovation is more useful if there is a high value from applying it

SHARING: 4. Innovation is more useful if it can easily be shared with others

PROOF: 5. Innovation is useful when early feedback can prove its usefulness in practice

SYNCHRONOUS: 6. Innovation is more useful when it can be used together
with a larger body of Innovation

MEASURABILITY: 7. Innovation is more useful when the results of its application can be measured

ACCEPTANCE: 8. Innovation is more useful when it is widely accepted in your culture.

COST: 9. Innovation is more useful when the cost of applying it is low.

GENERATION: 10. Innovation is more useful when it can be used to generate even more useful Innovation.



Innovation is 'Plural-Efficiency Improvement'

So, our concept is 'plural efficiency' improvement,
of significant dimension
(10:1 as a benchmark idea, but not only possibility).

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app.needsandmeans.com

Tom Gilb & K...ents-Material appleinsider.com Google Docs TOM'S NET Services » Resources » NORSKE STEDER Travel 4 TOM Social Sites NEWS ALLE ANDRE

Requirements	Use Community Su...	Defect Preventio...	The BEST Design	Design	Sum
Reduce Bed Days Decrease from 4 to 3 days By end of November 2015 Average number of days per [Patient Type] per month [Patient Type = Adult, child]	0.3 days 30 % ↗ 30 %	0.5 days 50 % ↗ 80 %	0 days 0 % ↗ 80 %	0 days 0 % ↗ 80 %	80 %
Clinical Quality Decrease from 0.1 to 0.05 Infections By end of June 2015 Average number of [Infections] per [Patient Type] per month [Infections = Bloodstream, Patient Type = HIV]	0.025 Infections 50 % ↗ 50 %	.003 Infections 6 % ↗ 56 %	0 Infections 0 % ↗ 56 %	0 Infections 0 % ↗ 56 %	56 %
Sum Of Performance:	80 % ↗ 80 %	56 % ↗ 136 %	0 % ↗ 136 %	0 % ↗ 136 %	
Skilled Effort in work Days Increase from 0 to 100 work days o... By end of all No qualifiers	10 work d... 10 % ↗ 10 %	50 work d... 50 % ↗ 60 %	0 work d... 0 % ↗ 60 %	0 work d... 0 % ↗ 60 %	60 %
Sum Of Resources:	10 % ↗ 10 %	50 % ↗ 60 %	0 % ↗ 60 %	0 % ↗ 60 %	
Performance To Resource Ratio:	8.00	1.12	0.00	0.00	

Main ideas or Principles

- *Numeric* Requirements
 - can *stimulate* creativity and innovation
 - can *protect* 'creative ideas'
 - from being dismissed

Creative Design Principles supported by Metrics

- **Estimating and measuring the effects of ideas, on your requirements**
 - will stimulate people to find better ideas
 - will defend good enough ideas
 - will help teams to prioritise and agree on good or promising ideas
 - will make people responsible for the results of their ideas, and thus motivate them to
 - make *sure* they work
 - even if they need ‘better definition’ to succeed

My basic 'paper' on 'Creativity'

Practical Purposeful Creativity paper

Journal: AI & SOCIETY · Volume
7 ... Author, 1993

[http://www.gilb.com/tiki-
download_file.php?fileId=22](http://www.gilb.com/tiki-download_file.php?fileId=22)

Practical Purposeful Creativity Constructs

by Tom Gilb,
Independent Consultant and Author,
Ormerudveien 4C, N-1410
Kolbotn, Norway
Telephone: +47-66-801697, Tom@Gilb.com, +47 920 66 705
URL www.Gilb.com
Version Updated May 4 2006, Nov 6 2008 (address, Imagination definition at end)

Introduction

This paper is written as an invited contribution to a book "Creativity, Innovation and Cooperation" (Springer) and a special issue of "AI & Society: the Journal of Human-Centred Systems and machine Intelligence". The editor is Robert C. Muller (Fax +44-491-579750). Published around 1992.

Definitions.

Creativity: accessing ideas to improve some values.

Practical (INDUSTRIAL) Creativity: *Systematic Identification of ideas which serve useful human purposes*

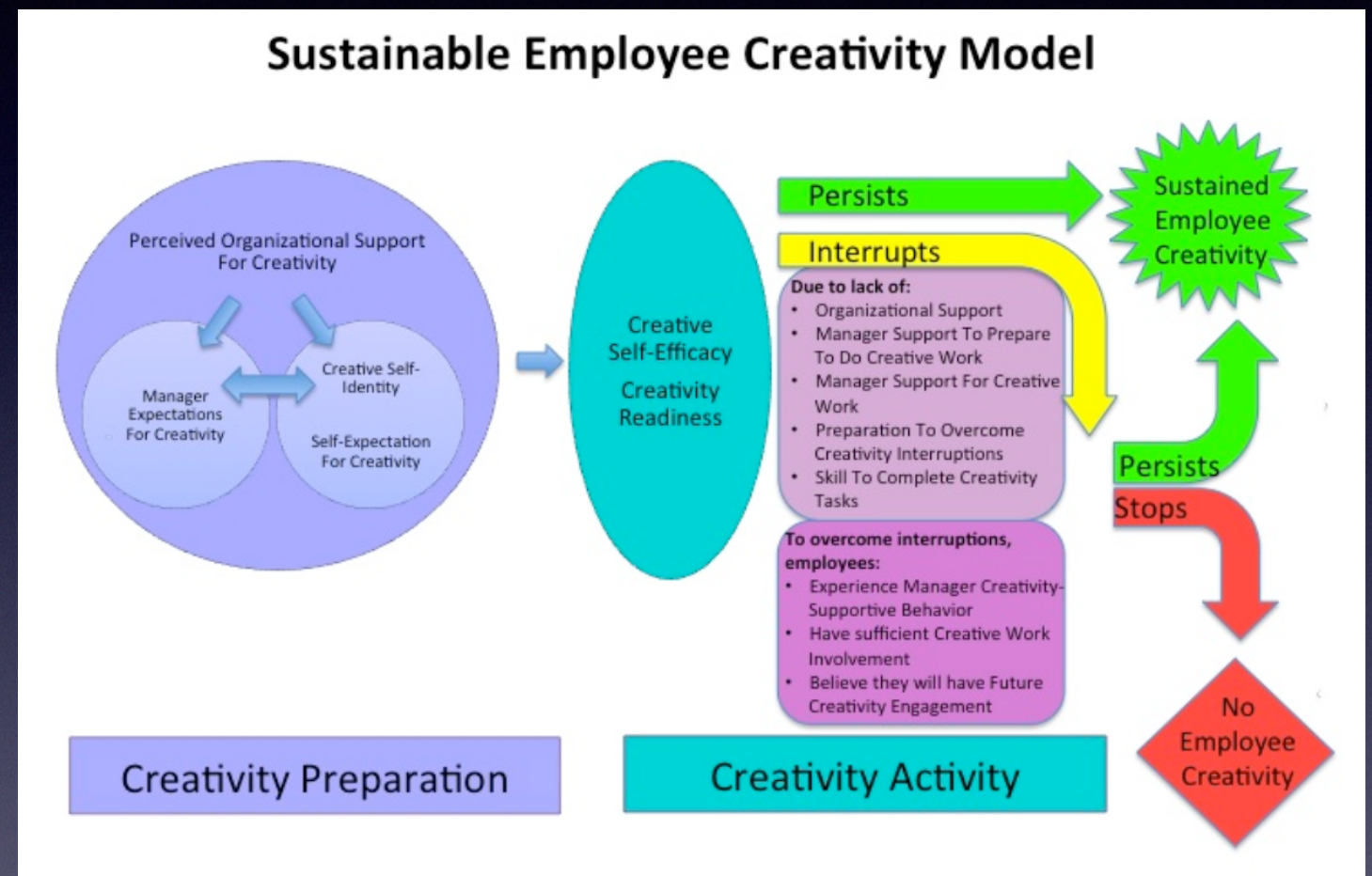
Purposeful Creativity: *Identification and validation of ideas which meet specified objectives.*

Part One: A Theory of Practical Creativity.

Creativity is a result of the creativity process structure and its particular agent.

A creative process is more or less suitable (or “good”) for its purposes as a result of:

- its structure (how the creative process is defined and managed)
- who does it (the individual, the team, the organization).
- its resources (time, money, knowledge base)



My Ten fundamental principles of Practical Creativity

(1993)

1. *Practical* creativity must have a defined purpose which is objectively measurable.
2. Practical creativity must operate in multiple purpose dimensions at the same time.
3. The result of practical creativity depends on the clarity of the stated objectives.
4. The result of practical creativity depends on the nature of the creativity process and the agents employed to do it.
5. Any creativity objectives initially defined, will tend to change as time goes on due to changed perceptions, changed external world and experience with delivering partial results.
6. The practical creative process follows the rules of any similar “design”, “planning” or “engineering process”: it is merely a higher level generalization of them.
7. The “net value” of an additional idea for solving a defined problem can be estimated in relation to remaining unsatisfied objectives. How far will the idea move us in the direction of our final objectives, from where we are at the moment?
8. The degree of yet unsatisfied objectives for a problem being solved, determines the priority needed for continued creative effort. This (degree of yet unsatisfied objectives) is a function of previously accepted or applied ideas and of any changed objectives since they were originally defined.
9. Seemingly “bureaucratic” idea management processes can stimulate, protect and justify creative effort. Total freedom of thought is not necessarily the best way to get useful creativity.
10. If a creative effort fails to satisfy even a single real, defined or not, critical success factor then it is, in practice, a total failure. It serves no useful purpose.

1. Measurable Purpose
2. Multiple Purposes
3. Goal clarity is critical
4. Process+ Agents = Result
5. Change happens
6. Creation = Engineering = Planning
7. Degrees of Innovation Evolve
8. Unsatisfied goals = Priority Signal
9. Constraints and Targets **stimulate** creativity
10. We must satisfy ALL critical factors (even unknown ones)

End of ?? minute talk

Now some exercises
or if time

let's look at DPP as metrics driven innovation

If there is not time for this in 20 minutes,
then put off, to another opportunity

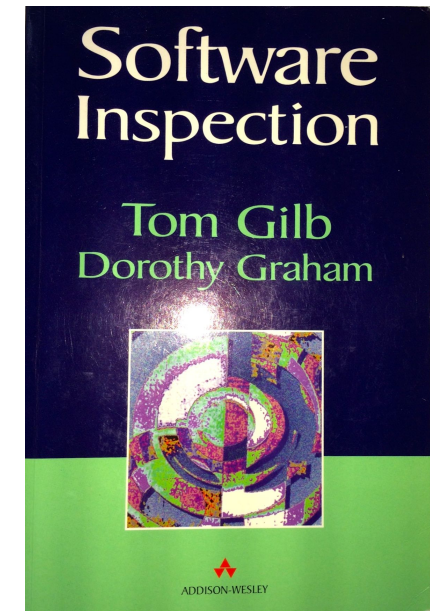
Defect Prevention Process

(IBM 1990)

Metrics Driven Innovation

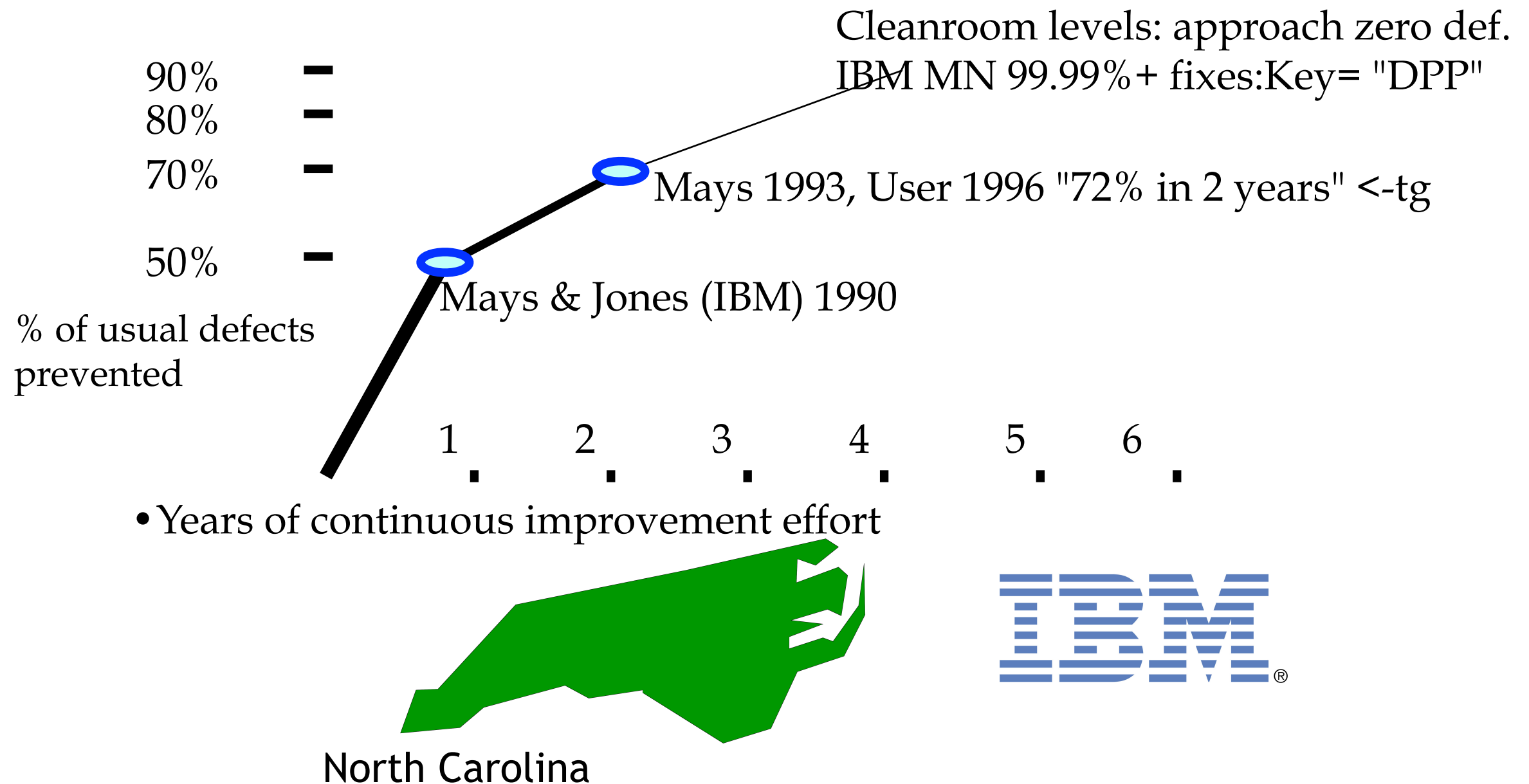
DPP is described in the Software Inspection book 1993

- 2 Chapters on DPP
 - 7 By Tom (DPP with Inspection)
 - 17 by Robert Mays
- R Mays IBM SJ, Paper on
- ‘Defect Prevention Process’, DPP
 - http://www.gilb.com/tiki-download_file.php?fileId=457



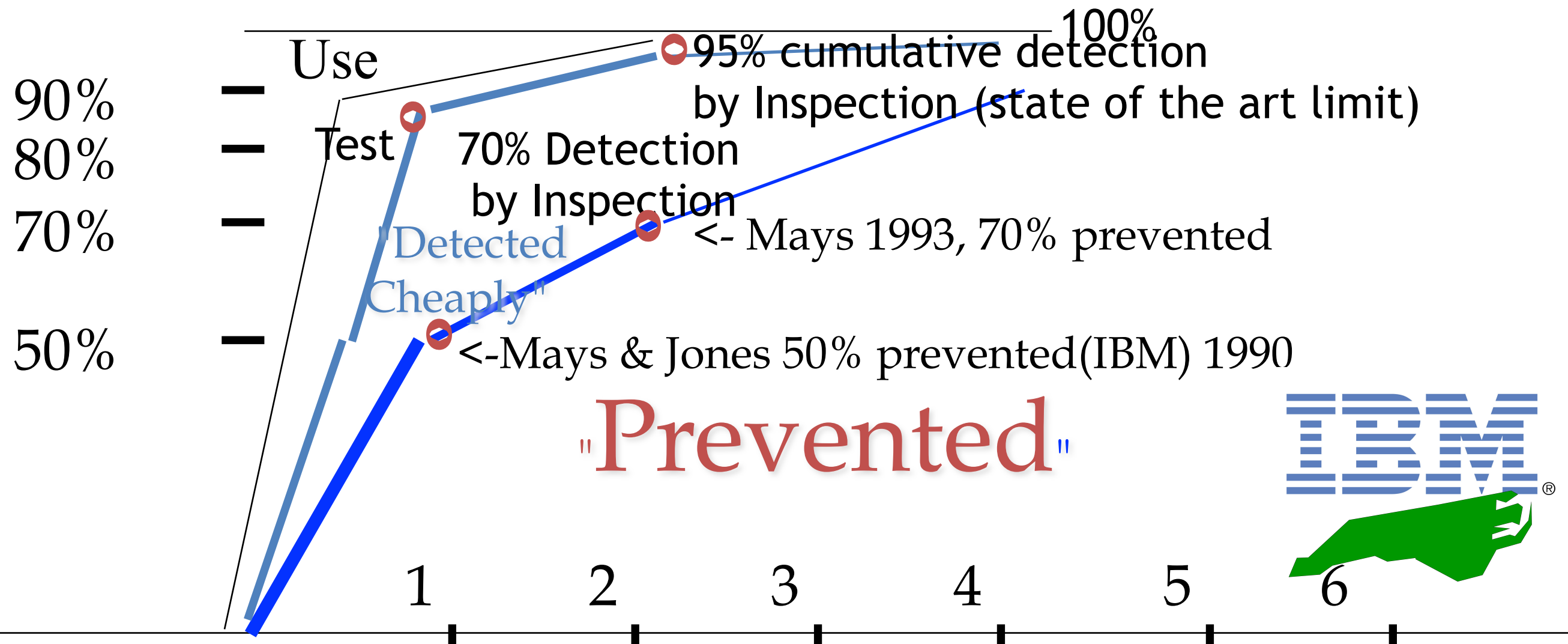
Defect Prevention Experiences:

Most defects can be prevented from getting in there *at all*



IBM Research Triangle Park Networking Laboratory

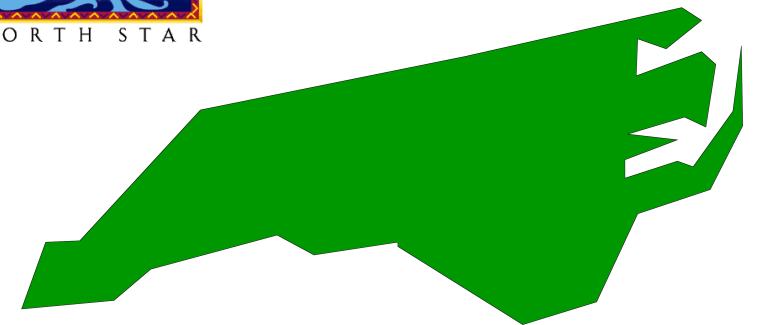
Prevention + Pre-test Detection is the most effective and efficient



- Prevention data based on state of the art prevention experiences (IBM RTP), Others (Space Shuttle IBM SJ 1-95) 95%+ (99.99% in Fixes)
- Cumulative Inspection detection data based on state of the art Inspection (in an environment where prevention is also being used, IBM MN, Sema UK, IBM UK)

IBM MN & NC DP Experience

- 2162 DPP Actions implemented
 - between Dec. 91 and May 1993 (30 months)<-Kan
- RTP about 182 per year for 200 people.<-Mays 1995
 - 1822 suggested ten years (85-94)
 - 175 test related
- RTP 227 person org<- Mays slides
 - 130 actions (@ 0.5 work-years
 - 34 causal analysis meetings @ 0.2 work-years
 - 19 action team meetings @ 0.1work-years
 - Kickoff meeting @ 0.1 work-years
 - TOTAL costs 1% of org. resources
- ROI DPP 10:1 to 13:1, internal 2:1 to 3:1
- Defect Rates at all stages 50% lower with DPP



Cost of Quality over Time: Raytheon 95
Using DPP and Inspection as numeric drivers

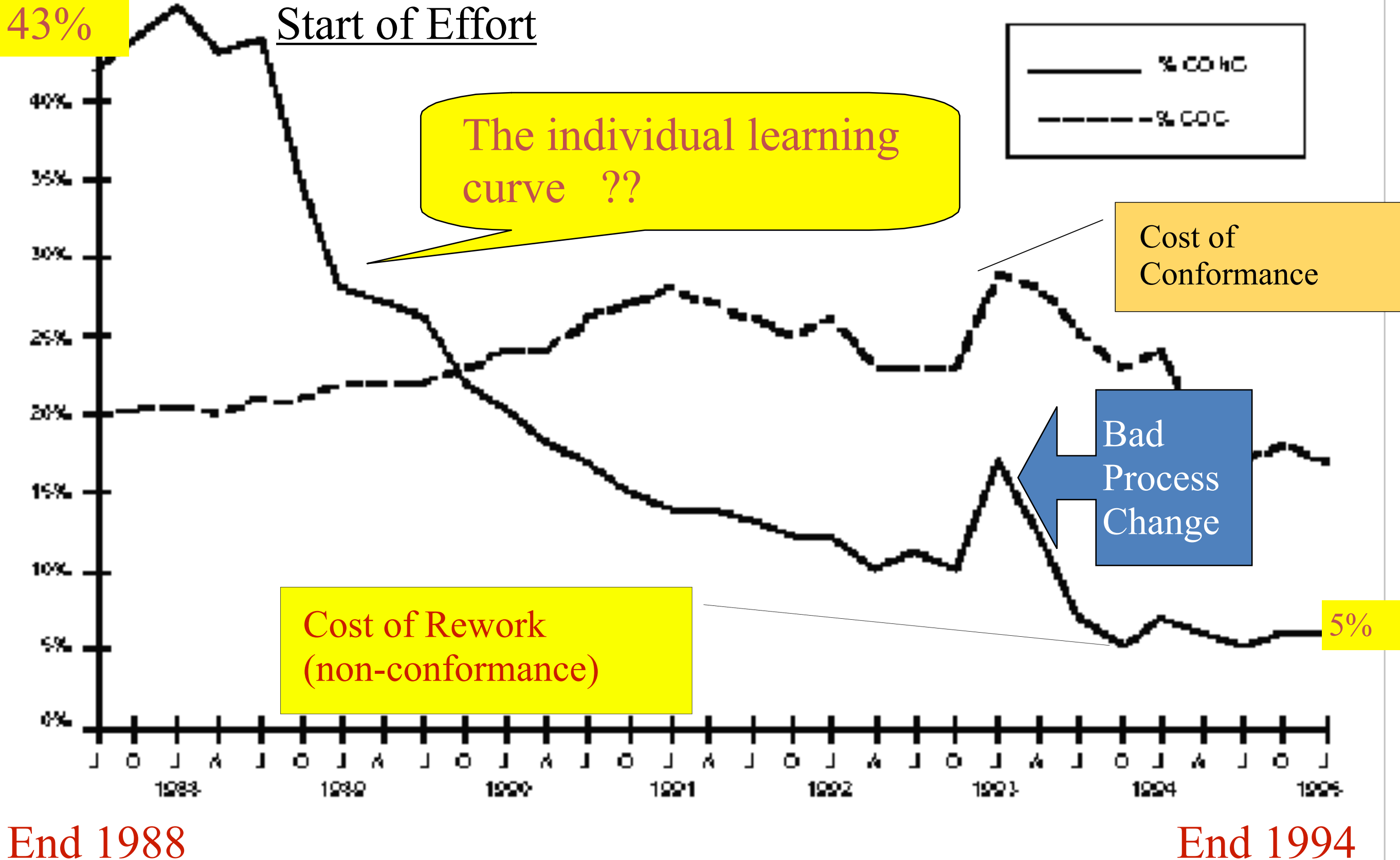


Figure 8: Cost of Quality Versus Time

Exercises and Discussion

30 minutes

Exercise 1

Clear Requirements stimulate
more-useful innovation

Frank's Objective

<http://www.bing.com/videos/search?q=ad+free+clip+sinatra+fly+me+to+the+moon&qv=ad+free+clip+sinatra+fly+me+to+the+moon&FORM=VDRE#view=detail&mid=572847559717D8D9BF3B572847559717D8D9BF3B>



Objective: Vague But 'Poetic'

Fly Me To The Moon
Fly me to the moon
Let me play among the stars
Let me see what spring is like
On a-Jupiter and Mars
In other words, hold my hand
In other words, baby, kiss me



[Quincy Jones](#) presents platinum copies of Frank Sinatra's album to Senator [John Glenn](#) and [Apollo 11](#) Commander [Neil Armstrong](#)

Brainstorm and tell 2 best solutions 3 minutes

- Requirement 1
 - Window side of room
 - Amnition: **Cheapest way to 'fly me' to the moon**
- Requirement 2
 - Wall side of room
 - Ambition: **Safest way to allow 'me' to roam the moon, observe it, communicate on it**

Exercise 2

Evaluating solutions for Impact

How good are solutions ?
How well do they match requirements ?

- Requirement 1
- Window side of room
- Cheapest way to 'fly me' to the moon
- **How much will that cost approximately?**

- Requirement 2
- Wall side of room
- Safest way to allow 'me' to roam the moon, observe it, communicate on it

How safe is your solution for my life and health?

Questions to discuss

- Did either requirement clarify what solutions could be used and which could not be used?
- Can *both* requirements be applied at the same time

R1: Cheapest way to 'fly me' to the moon

R2: Safest way to allow 'me' to roam the moon, observe it, communicate on it

- and if so does that change the solutions available?

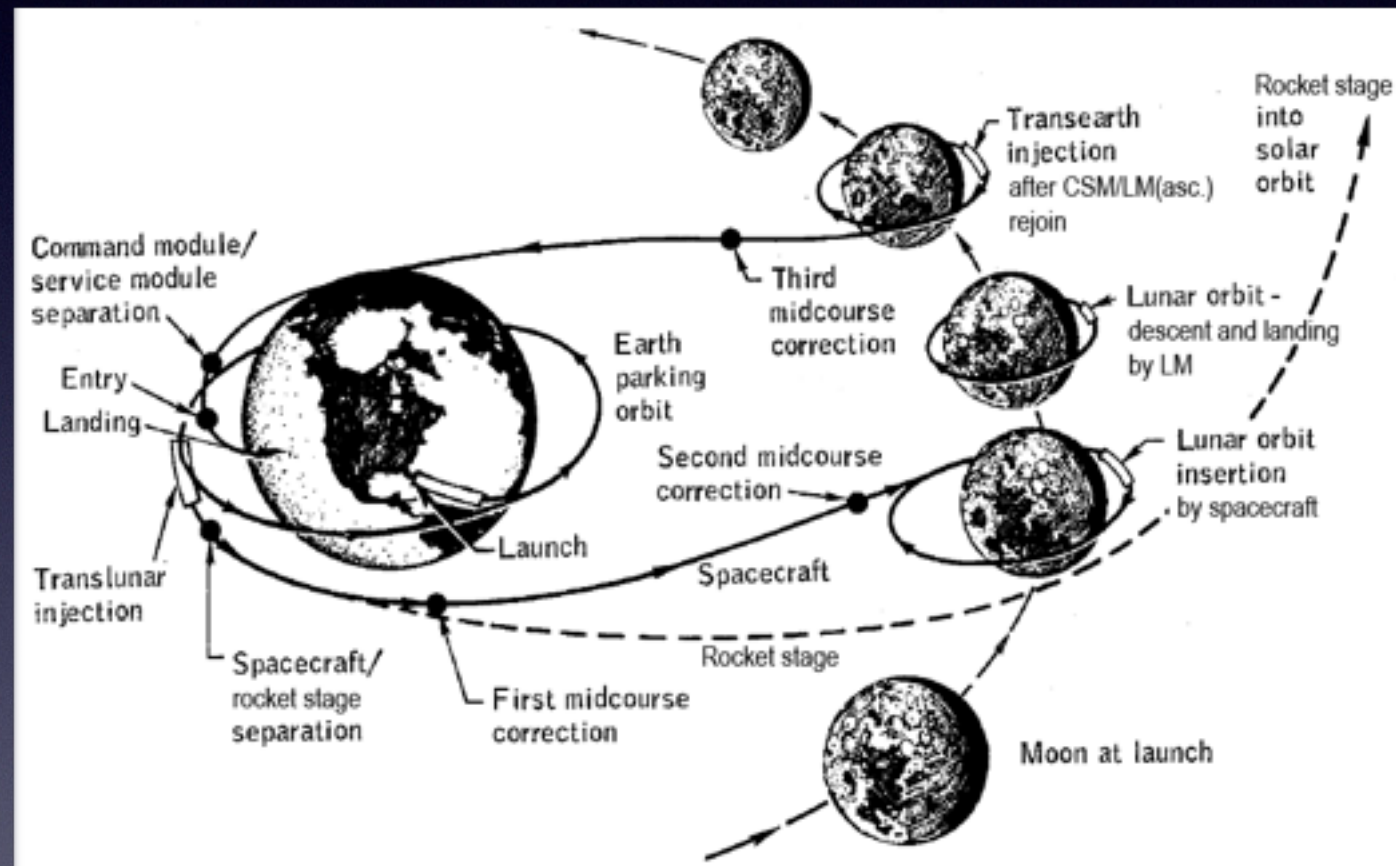
Exercise 3

Extreme, Beyond State of the Art, requirements

do they provoke creativity?

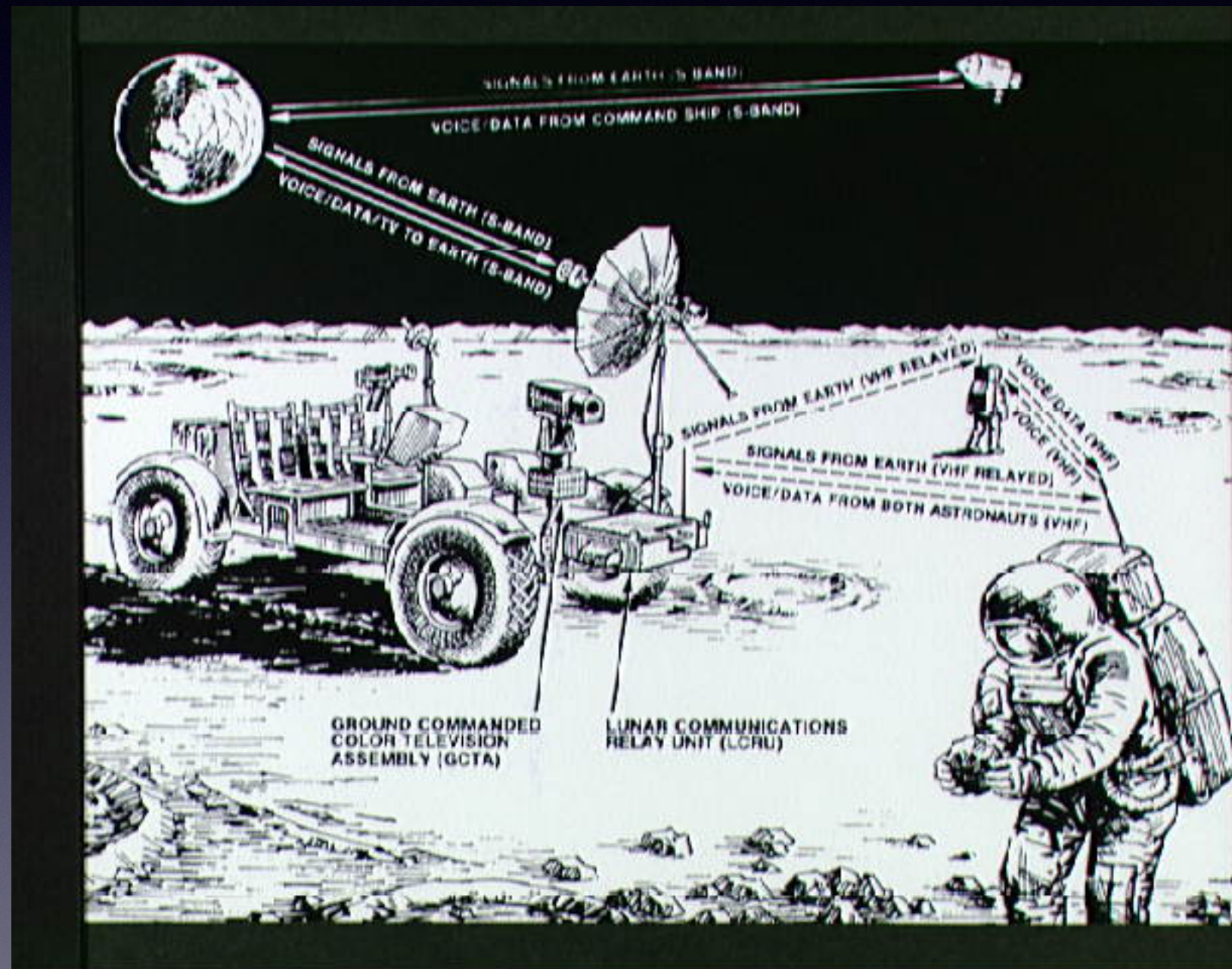
Innovation Challenge

- I want to
- get to the moon and back
- in 10 seconds



Changing problem formulation

- OR, REPHRASED
- “Get my Perception and Voice/Image
 - from Earth, and to the moon
 - within 10 seconds
 - within a decade”



Solution?

Telepresence
Robot sent to moon
might be a solution



Best Regards,
Ray

E. Ray Arell, Jr. | Director of Intel Emergent Systems and Coaching | w: 503-264-9120 m: 503-705-6982 web: [Agile and Lean CoP](#)




Exercise 4

Put the 2 requirements and 2 solutions on an
Impact Table
using Richard Smiths tool or a flipchart
and evaluate the designs

IET

	D1:Telepresence Robot	D2 Ship on next unmanned moon mission
R1 Cheapest		
R2 Safest		
Cost		
$(R1+R2)/Cost$		

<https://app.needsandmeans.com/iet/IET-EOJIRE4>

<div>  <div> Specifications Impact Tables Documents Glossary Follow Me </div> </div>				
Home / Impact Tables / Fly Me To The Moon				
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div>Fly Me To The Moon</div> <div> </div> </div>			
	Requirements	D1-Telepresence ... 	D2-Ship-Next 	Sum
	R1-Cheapest Remain from 0 to 0 By end of ? 	0 100 % 100 %	0 100 % 200 %	200 %
	R2-Safest Remain from 0 to 0 By end of ? 	0 100 % 100 %	0 100 % 200 %	200 %
	Sum Of Performance:	200 % 200 %	200 % 400 %	
	Moon-Cost Remain from 0 to 0 By end of ? 	0 100 % 100 %	0 100 % 200 %	200 %
	Sum Of Resources:	100 % 100 %	100 % 200 %	
	Performance To Resource Ratio:	 2.00	 2.00	

Some Principles of Useful Knowledge and also Some measurable attributes of Knowledge

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End Last slide